Business Airplanes 2012

Uncertainty continues to roil markets

ByFred George
fred_george@aviationweek.com

The year 2011 was another tough one for the business aircraft industry, witnessing a 3.5% overall decline in general aviation aircraft shipments, according to GAMA statistics. Turboprop deliveries declined 2.4% from 2011, light jet deliveries fell 6.3% and the midsize aircraft sector was flat at best. Large-cabin aircraft fared much better with increased demand from China, Russia and other emerging markets.

The inventory glut in the used aircraft market continues to drag down demand for new models in all sectors, a trend that could continue for several more years. Bargain hunters still are finding plenty of low-time, low-priced aircraft on the used market from which to choose. Aircraft sales transactions increased in 2011, but asking prices fell nearly 14% and the number of days that aircraft remained on the market increased.

The torpor in the used market is suppressing asking prices for new aircraft. At the end of 2011, 13.8% of the active business jet fleet was on block, according to Jetnet statistics quoted by GAMA. Still, that's down from 17% in 2008, the year the industry's recession took hold.

Turboprops are faring somewhat better. Less than 10% of the active fleet is on the resale market, but asking prices sank in 2011 and the average number of days on the market increased by nearly a week.

Fractional ownership programs also continue to suffer, primarily because of the recession. In earlier years, one in five or one in 10 new jet deliveries was going to a fractional program. The fractional ownership fleet shrunk by more than 10% in 2011 and, now, fractional operators are taking delivery of only a few units per year.

Globally, though, the corporate aircraft fleet grew by 3%, buoyed mainly by the acquisition of more long-range, large-cabin aircraft. Bombardier, for instance, delivered more than 100 Challenger 605 and 850, plus Global-series aircraft last year, representing a 9.6% increase from 2010. Embraer delivered 13 Legacy 600/650 jets, plus three Lineage 1000 aircraft. Gulfstream delivered 90 large-cabin models, including the first 12 green G650 aircraft to its completion centers. That was a 20% overall increase in large-cabin Gulfstream deliveries over the previous year.

Dassault delivered more than 60 units with its Falcon 7X flagship accounting for almost half of the aircraft. However, the French firm delivered one-third fewer aircraft in 2011 than in 2010.

China's high-net-worth individuals are demonstrating a preference for even larger models. Airbus told *The Wall Street Journal* it had sold 20 ACJs in China in the past seven years, with five more expected in 2012. Meanwhile, Boeing Business Jets sold three BBJs in China in 2011 and it anticipates making three to five more sales this year. Dassault expects to have 30 Falcon jets placed in China by the end of 2012, tripling

Bombardier Lerjet

the current number. Gulfstream has more than 80 aircraft in China and says that the Asia-Pacific region accounts for 27% of its backlog, most of which will go to China.

Africa also holds promise for business aviation, in large part because of surging Chinese investments there in energy, transportation and metals. It's 6,600 nm from Shanghai to Lagos, Nigeria, and nearly 7,000 nm from Shanghai to Cape Town, South Africa — distances that help ensure more long-range, large-cabin business aircraft will enter service in this region.

Light and midsize aircraft manufacturers suffered through more rough weather last year. Bombardier delivered 24 Learjet 40-series aircraft, half the number that it averaged before the recession. Cessna's billings ticked up to 183 units, but that's still down 60-70% from pre-recession levels. Even Embraer's Phenom series, once the hottest selling duo of light jets, suffered a 34% decline in 2011 compared to 2010.

Hardest hit was Hawker Beechcraft. It only delivered 30 turbofan aircraft in the first three quarters of 2011 and declined to provide billings for the fourth quarter until mid-April 2012. The company was expected to report a nearly $500 million loss for 2011 and Standard & Poor's cut its credit rating to "D" from "C" in early April. HBC's outside accounting firm said it doubted the Wichita company could remain a "going concern."

The midsize and super-midsize segments, once the strongest performers in the business aviation market, only experienced slight upticks in 2011. Unit deliveries of the Bombardier Learjet 60XR and Challenger 300, along with Cessna Citations XLS+ and Sovereign, improved. Billings for all models of Hawkers, though, were lackluster.

On the upside, the 2012 *Handbook* welcomes aboard the upgraded Cessna Citation Ten It's a stretched, more powerful, more fuel efficient and longer range Model 750 that will be able to fly eight passengers 3,200 nm while cruising at Mach 0.82. When sprinting between the U.S. East and West coasts, the Citation Ten should be able to cruise at nearly Mach 0.90.

This year's *Handbook*, though, reflects the realities of the current market. Those looking closely will notice that several OEMs, especially light jet makers, have sharpened their pencils when quoting prices. Most manufacturers held down price increases to 2-3% for 2012.

Bombardier actually reduced prices on all Learjets, plus the Challenger 300 and 605. And Cessna suppressed price increases to about 1% on most models, plus it whacked $24,000 off the price of the CJ3. The fourth-generation Citation M2, a faster, lighter weight and more-capable version of the CE525 that it will replace, is priced $750,000 less than the 2011 CJ1+. Even Embraer held down price increases to 3-4% for its two Phenom light jets despite the sharp spike in the Brazilian real to U.S. dollar exchange rate.

Dassault Falcon

Heated competition in this weak market segment created two casualties. HBC pulled the plug on its $7.5 million Hawker 200 (aka Premier II) and $13.3 million Hawker 750. Those two aircraft had less range than their main rivals built by other manufacturers.

The Cessna Citation Encore+ and Gulfstream G200 also depart the *Handbook*, but they were slated to be replaced by the Citation CJ4 and G280, respectively, as part of their manufacturers' long-term product strategies. The first G280 (formerly G250) super-midsize aircraft should enter service by midyear, providing operators with much-improved cabin comfort, range and speed, along with vastly better airport performance, compared with the G200. Gulfstream has high long-term hopes for the G280, but the current glut of super-midsize jets on the used aircraft market is suppressing demand, resulting in a slim order book.

In the long term, though, analysts are looking for a slow improvement in new aircraft sales. Many key indicators are positive, even though the world economy stumbles through sluggish 2-3% GDP growth that's not expected to improve for at least four years. Meanwhile, corporate profits in 2011 topped $1.9 trillion, a new record level. The global population of high-net-worth individuals neared 11 million people in 2010, with a combined wealth of almost $43 trillion, according to Merrill Lynch and Capgemini Consulting. U.S. auto sales, a harbinger of economic recovery, are surging strongly as drivers seek more-fuel-efficient vehicles and trade in chronically broken clunkers.

Corporate decision makers and high-net-worth individuals remain uncertain about the future because of other signs that point to stagnation or a possible downturn. They're reluctant to commit to purchasing new aircraft. Book-to-bill ratios, a critical measure of supply and demand, reflect continued weakness in order book backlogs. Some analysts predict that backlogs will remain anemic for at least three more years.

Last year, aircraft manufacturers expected the industry to be well poised for recovery in 2012. This year, only large-cabin OEMs are smiling. Manufacturers of smaller business aircraft are buckled in for more years of stormy going.

Some of these manufacturers may not be able to weather the rough ride. But the ones that do survive are looking forward to a much brighter future by the end of the decade in North America and Europe, encouraged in the near term by increased sales in China, Asia-Pacific, Brazil, India and Russia. **BCA**

Bombardier Challenger 300

How to Use the Airplane Charts

Manufacturer, Model

In some cases, the airplane manufacturer's name is abbreviated, but the company's full name and address can be found on the manufacturers' websites. The model name also is included in this data group.

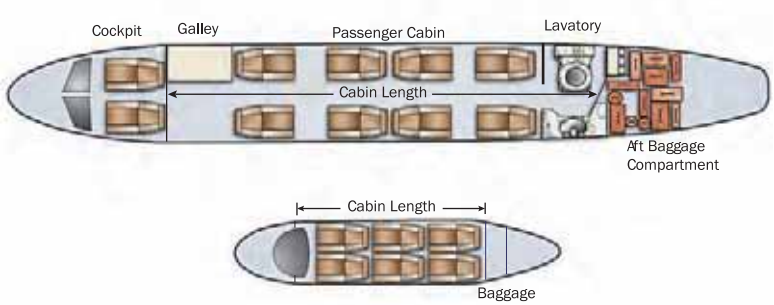
BCA Equipped Price

Price estimates are first quarter, current year dollars for the next available delivery. Some aircraft have long lead times, thus the actual price will be higher than our published price. Note well, manufacturers may adjust prices without notification.

Piston-powered airplanes — Computed retail price with at least the level of equipment specified in the *BCA* Required Equipment List on page 82.

Turbine-powered airplanes — Average price of 10 of the last 12 commercial deliveries, if available. The aircraft serial numbers aren't necessarily consecutive because of variations in completion time and because some aircraft may be configured for noncommercial, special missions.

Cabin Length



Characteristics

Seating Capacity — Crew + Typical Executive Seating/Maximum Seating.

For example, 2+8/19 indicates that the aircraft requires two pilots, there are eight seats in the typical executive configuration and the aircraft is certificated for up to 19 passenger seats.

A four-place single-engine aircraft is shown as 1+3/3, indicating that one pilot is required and there are three other seats available for passengers. We require two pilots for all turbofan airplanes, except the Cessna Mustang, CJ1+ and CJ2+; Embraer Phenom 100 and 300; Hawker Beechcraft Premier IA; and the SyberJet SJ30-2, which have, or will have, a large percentage of single-pilot operators.

Four crewmembers are specified for ultra-long-range aircraft — three pilots and one flight attendant.

Each occupant of a turbine-powered airplane is assumed to weigh 200 lb., thus allowing for stowed luggage and carry-on items. In the case of piston-engine airplanes, we assume each occupant weighs 170 lb. There is no luggage allowance for piston-engine airplanes.

Wing Loading — MTOW divided by total wing area.

Power Loading — MTOW divided by total rated horsepower or total rated thrust.

FAR Part 36 Certificated Noise Levels — Fly-over noise in A-weighted decibels (dBA) for small and turboprop aircraft. For turbofan-powered aircraft, we provide EPNdB (effective perceived noise levels) for takeoff, sideline and approach.

Dimensions

External Length, Height and **Span** dimensions are provided for use in determining hangar and/or tiedown space requirements.

Internal Length, Height and Width are based on a completed interior, including insulation, upholstery, carpet, carpet padding and fixtures.

As shown in the Cabin Length illustration, for airplanes other than "cabin-class" models, the length is measured from the forward bulkhead ahead of the rudder pedals to the back of the rearmost passenger seat in its normal, upright position.

For "cabin-class" aircraft, we show the overall length of the passenger cabin, measured from the aft side of the forward cabin divider to the aft-most bulkhead of the cabin. The aft-most point is defined by the rear side of a baggage compartment that is accessible to passengers in flight or by the aft pressure bulkhead.

The overall length is reduced by the length of any permanent mounted system or structure that is installed in the fuselage ahead of the aft bulkhead. For example, some aircraft have full fuselage cross-section fuel tanks mounted ahead of the aft pressure bulkhead.

The second length number is the net length of the cabin that may be occupied by passengers. It's measured from the aft side of the forward cabin divider to an aft point defined by the rear of the cabin floor capable of supporting passenger seats, the rear wall of an aft galley or lavatory, an auxiliary pressure bulkhead or the front wall of the pressurized baggage compartment. Some aircraft have the same net and overall interior length because the manufacturer offers at least one interior configuration with the aft-most passenger seat located next to the front wall of the aft luggage compartment.

Interior height is measured at the center of the cross section. It may be based on an aisle that is dropped several inches below the main cabin floor that supports the passenger seats. Some aircraft have dropped aisles of varying depths, resulting in less available interior height in certain sections of the cabin.

Two width dimensions are shown for multiengine turbine airplanes — one at the widest part of the cabin and the other at floor level. The dimensions, however, are not completely indicative of the usable space in a specific aircraft because of individual variances in interior furnishings.

Power

Number of engines, if greater than one, and the abbreviated name of the manufacturer:

CFE — ASE/GE joint venture
RR — Rolls-Royce
CFMI — CFM International
Cont — Teledyne Continental
Hon — Honeywell
IAE — International Aero Engines
Lyc — Textron Lycoming
P&WC — Pratt & Whitney Canada
Wms/RR — Williams/Rolls-Royce

Output — Takeoff rated horsepower for propeller-driven aircraft or pounds thrust for turbofan aircraft. If an engine is flat rated, enabling it to produce takeoff rated output at a higher than ISA (standard day) ambient temperature, the flat rating limit is shown as ISA+XXC. Highly flat-rated engines, i.e., engines that can produce takeoff rated thrust at a much higher than standard ambient temperature, typically provide substantially improved high-density altitude and high-altitude cruise performance.

Inspection Interval is the longest, scheduled hourly major maintenance interval for the engine, either "t" for TBO or "c" for compressor zone inspection. OC is shown only for engines that have "on condition" repair or replace parts maintenance.

Airbus ACJ 318

Weights (lb.)

Weight categories are listed as appropriate to each class of aircraft.

Max Ramp — Maximum ramp weight for taxi.

Max Takeoff — Max takeoff weight as determined by structural limits.

Max Landing — Max landing weight as determined by structural limits.

Zero Fuel — Maximum zero fuel weight, shown by "c" indicating the certificated MZFW or "b," a *BCA*-computed weight based on MTOW minus the weight of fuel required to fly 1.5 hr. at high-speed cruise.

Max ramp, max takeoff and max landing weights may be the same for light aircraft that may only have a certificated max takeoff weight.

EOW/BOW — Empty operating weight is shown for piston-powered airplanes. Basic operating weight, which essentially is EOW plus required flight crew, is shown for turbine-powered airplanes. EOW is based on the factory standard weight, plus items specified in the *BCA* Required Equipment List, less fuel and oil. BOW, in contrast, is based on the average EOW weight of the last 10 commercial deliveries, plus 200 lb. for each required crewmember. We require four crewmembers — three flight crew and one cabin attendant — for ultra-long-range aircraft.

There is no requirement to add in the weight of cabin stores, but some manufacturers choose to include galley stores and passenger supplies as part of the BOW buildup. Life vests, life rafts and appropriate deep-water survival equipment are included in the weight buildup of the 80,000-lb.-plus, ultra-long-range aircraft.

Max Payload — Zero fuel weight minus EOW or BOW, as appropriate. For piston-engine airplanes, max payload frequently is a computed value because it is based on the *BCA* ("b") computed maximum ZFW.

Executive Payload — Based on 170 pounds per occupant for multiengine piston-engine airplanes and 200 lb. per occupant for turbine-engine airplanes, as shown in the executive seating section of the "Characteristics" section. Pilots and passengers, however, are counted as occupants in piston-engine airplanes. Only

Cessna Citation Ten

passengers are counted as occupants in turbine-powered airplanes because the required crew is included in the BOW. If the executive payload exceeds the maximum payload, we use maximum payload. Executive payload is not computed for single-engine piston airplanes.

Max Fuel — Usable fuel weight based on 6.0 lb. per U.S. gallon for avgas or 6.7 lb. per U.S. gallon for jet fuel. Fuel capacity includes optional, auxiliary and long-range tanks, unless otherwise noted.

Available Payload With Max Fuel — Max ramp weight minus the tanks-full weight, not to exceed zero fuel weight minus EOW or BOW.

Available Fuel With Max Payload — Max ramp weight minus zero fuel weight, not to exceed maximum fuel capacity.

Available Fuel With Executive Payload — Available fuel weight based on max ramp weight minus BOW plus executive payload, up to the actual fuel capacity.

Limits

BCA lists V speeds and other limits as appropriate to the class of airplane. These are the abbreviations used on the charts:

VNE — Never exceed speed (red line for piston-engine airplanes).

VNO — Normal operating speed (top of green arc for piston-engine airplanes).

VMO — Maximum operating speed (red line for turbine-powered airplanes).

MMO — Maximum operating Mach number (red line for turbofan-powered airplanes and a few turboprop airplanes).

FL/VMO — Transition altitude at which Vmo equals Mmo (large turboprop and turbofan aircraft).

VA — Maneuvering speed (except for certain large turboprop and all turbofan aircraft).

VDEC — Accelerate/stop decision speed (multiengine piston and light multiengine turboprop airplanes).

VMCA — Minimum control airspeed, airborne (multiengine piston and light multiengine turboprop airplanes).

VSO — Maximum stalling speed, landing configuration (single-engine airplanes) in KCAS.

VX — Best angle-of-climb speed (single-engine airplanes).

VXSE — Best angle-of-climb speed, one-engine inoperative (multiengine piston and multiengine turboprop airplanes under 12,500 lb.).

VY — Best rate-of-climb speed (single-engine airplanes).

VYSE — Best rate-of-climb speed, one-engine inoperative (multiengine piston and multiengine turboprop airplanes under 12,500 lb.).

V_2 — Takeoff safety speed (large turboprops and turbofan airplanes).

VREF — Reference landing approach speed (large turboprops and turbofan airplanes, four passengers, NBAA IFR reserves; eight passengers for ultra-long-range aircraft).

PSI — Cabin pressure differential (all pressurized airplanes).

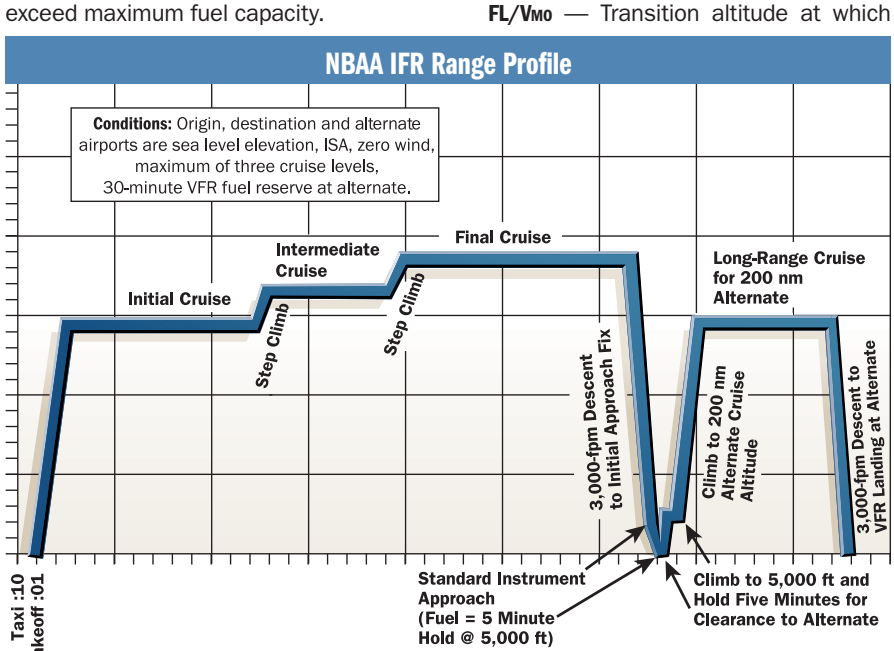
Airport Performance

Approved Flight Manual takeoff runway performance is shown for sea-level, standard day and for 5,000 ft. elevation/25C day, density altitude. **All-engine takeoff distance (TO)** is shown for single-engine and multiengine piston, and turboprop airplanes with an MTOW of less than 12,500 lb.

Accelerate/Stop distance (A/S) is shown for small multiengine piston and small turboprop airplanes. Takeoff field length (TOFL), the greater of the one-engine inoperative (OEI) takeoff distance or the accelerate/stop distance, is shown for FAR Part 23 Commuter Category and Part 25 airplanes. If the accelerate/stop and OEI accelerate/go distances are equal, the TOFL is the balanced field length.

Landing distance (LD) is shown for Part 23 Commuter Category and Part 25 Transport Category airplanes. The landing weight is BOW plus four passengers and NBAA IFR fuel reserves. We assume that 80,000-lb.-plus ultra-long-range aircraft will have eight passengers on board.

The V_2 and VREF speeds are useful for reference when comparing the TOFL and


NBAA IFR Range Profile
Conditions: Origin, destination and alternate airports are sea level elevation, ISA, zero wind, maximum of three cruise levels, 30-minute VFR fuel reserve at alternate.
Final Cruise
Intermediate Cruise
Initial Cruise
Long-Range Cruise for 200 nm Alternate
Step Climb
Step Climb
3,000-fpm Descent to Initial Approach Fix
Climb to 200 nm Alternate Cruise Altitude
3,000-fpm Descent to VFR Landing at Alternate
Taxi :10
akeoff :01
Standard Instrument Approach (Fuel = 5 Minute Hold @ 5,000 ft)
Climb to 5,000 ft and Hold Five Minutes for Clearance to Alternate

LD numbers because they provide an indication of potential minimum-length runway performance when low RCR or runway gradient is a factor.

BCA lists two additional numbers for large turboprop- and turbofan-powered airplanes. First, we publish the Mission Weight, which is the lower of:

(1) The actual takeoff weight with four passengers (eight passengers for ULR aircraft) and full fuel when de-parting from a 5,000-ft./25C airport.

(2) The maximum allowable takeoff weight based when departing with the same passenger load and at the same density altitude.

For two-engine aircraft, the mission weight, when departing from a 5,000-ft., ISA+20C airport, may be less than the MTOW because of Part 25 second-segment, OEI climb performance requirements. Aircraft with highly flat-rated engines are less likely to have a mission weight that is performance limited when departing from hot-and-high airports.

For three- or four-engine aircraft, the mission weight usually is based on full tanks and the actual number of passengers, rather than being performance limited.

Second, we publish the NBAA IFR Range for the hot-and-high departure mission weight, assuming a transition into standard day, ISA flight conditions after takeoff. For purposes of computing NBAA IFR range, the aircraft is flown at the long-range cruise speed shown in the "Cruise" block or at the same speed as shown in the "Range" block.

Climb

The all-engine time to climb provides an indication of overall climb performance, especially if the aircraft has an all-engine service ceiling well above our sample top-of-climb altitudes.

We provide the all-engine time to climb to one of three specific altitudes, based on type of aircraft departing at MTOW from a sea-level, standard-day airport:

(1) FL 100 (10,000 ft.) for normally aspirated single-engine and multiengine piston aircraft, plus pressurized single-engine piston aircraft and unpressurized turboprop aircraft.

(2) FL 250 for pressurized single-engine and multiengine turboprops.

(3) FL 370 for turbofan-powered aircraft. The data are published as time to climb in minutes/climb altitude. For example, if a non-pressurized twin-engine piston aircraft can depart from a sea-level airport at MTOW and climb to 10,000 ft. in 8 min., the time to climb is expressed as 8/FL 100.

We also publish the initial all-engine climb feet-per-nautical-mile gradient, plus initial engine-out climb rate and gradient, for single-engine and multiengine pistons and turboprops with MTOWs of 12,500 lb. or less.

GippsAero GA8 Airvan

The OEI climb rate for multiengine aircraft at MTOW is derived from the Airplane Flight Manual. OEI climb rate and gradient is based on landing gear retracted and wing flaps in the takeoff configuration used to compute the published takeoff distance.

The climb gradient for such airplanes is obtained by dividing the product of the climb rate (fpm) in the Airplane Flight Manual times 60 by the V_Y or V_{YSE} climb speed, as appropriate.

The OEI climb gradients we show for Part 23 Commuter Category and Part 25 Transport Category aircraft are the second-segment net climb performance numbers published in the AFMs. Please note:

The AFM net second-segment climb performance numbers are adjusted downward by 0.8% to compensate for variations in pilot technique and ambient conditions.

The OEI climb gradient is computed at the same flap configuration used to calculate the takeoff field length.

Ceilings (ft)

Maximum Certificated Altitude — Maximum allowable operating altitude determined by airworthiness authorities.

All-Engine Service Ceiling — Maximum altitude at which at least a 100-fpm rate of climb can be attained, assuming the aircraft departed a sea-level, standard-day airport at MTOW and climbed directly to altitude.

OEI (engine-out) Service Ceiling — Maximum altitude at which a 50-fpm rate of climb can be attained, assuming the aircraft departed a sea-level, standard-day airport at MTOW and climbed directly to altitude.

Sea-Level Cabin — Maximum cruise altitude at which a 14.7-psia, sea-level cabin altitude can be maintained in a pressurized airplane.

Cruise

Cruise performance is computed using EOW with four occupants or BOW with four passengers and one-half fuel load. Ultra-long-range aircraft carry eight passengers for purposes of computing

NOTICE TO READERS

During recent years, the U.S. Federal Trade Commission has conducted investigations into the practice of certain industries in fixing and advertising list prices. It is the position of the FTC that it is deceptive to the public and against the law for list prices of any product to be specified or advertised in a trade area if the majority of sales are made at less than those prices.

BCA is not in a position to know the prices for most of the sales in each trading area in the United States for each of the products in this issue. Therefore, the prices shown in the tables and text in the *Purchase Planning Handbook* are based on suggested list prices furnished to us by the manufacturers or distributors, or on prices estimated by the editors. It may be possible to purchase some items in your trading area at prices less than those reported in this issue of *BCA*. Also, almost all manufacturers and distributors caution that prices are subject to change without notice.

cruise performance. Assume 170 lb. for each occupant of a piston-engine airplane and 200 lb. for each occupant of a turbine-powered aircraft.

Long Range — TAS, Fuel Flow in pounds/hour, flight level (FL) cruise Altitude and Specific Range for long-range cruise by the manufacturer.

Recommended (piston-engine airplanes) — TAS, Fuel Flow in pounds/hour, flight level (FL) cruise Altitude and Specific Range for normal cruise performance specified by the manufacturer.

High Speed — TAS, Fuel Flow in pounds/hour, flight level (FL) cruise Altitude and Specific Range for short-range, high-speed performance specified by the manufacturer.

Speed, fuel flow, specific range and altitude in each category are based on one mid-weight cruise point. They are not an average for the overall mission.

BCA imposes a 12,000-ft. maximum cabin altitude requirement on CAR3/FAR Part 23 normally aspirated aircraft. Turbocharged airplanes are limited to FL 250, providing they are fitted with supplemental oxygen systems having sufficient capacity for all occupants for the duration of the mission.

Pressurized CAR 3/FAR Part 23 aircraft are limited to a maximum cabin altitude of 10,000 ft. For Part 23 Commuter Category and Part 25 aircraft, the maximum cabin altitude for computing cruise performance is 8,000 ft.

To conserve space, we use flight levels (FL) for all cruise altitudes, which is appropriate considering that we assume standard day ambient temperature and pressure conditions. Cruise performance is subject to *BCA*'s verification.

Ranges

BCA shows various paper missions for each aircraft that illustrate range vs. payload tradeoffs, runway and cruise performance, plus fuel efficiency. Similar to the cruise profile calculations, *BCA* limits the maximum altitude to 12,000 ft. for normally aspirated, non-pressurized CAR 3/FAR Part 23 aircraft, 25,000 ft. for turbocharged airplanes with supplemental oxygen, 10,000-ft. cabin altitude for pressurized CAR 3/FAR Part 23 airplanes and 8,000-ft. cabin altitude for Part 23 Commuter Category or Part 25 aircraft.

Seats-Full Range (single-engine piston airplanes) — Based on typical executive configuration with all seats filled with 170-lb. occupants, with maximum available fuel less 45-min. IFR fuel reserves. We use the lower of seats full or maximum payload.

Tanks-Full Range (single-engine piston airplanes) — Based on one 170-lb. pilot, full fuel less 45-min. IFR fuel reserves.

Executive Payload (multiengine piston airplanes and single-engine turboprops) — Based on typical executive configuration with all seats filled with 170-lb. occupants, maximum available fuel less 45-min. IFR fuel reserves. We use the lower of seats full or maximum payload.

Max Fuel With Available Payload (single-engine turboprops) — Based on BOW, plus full fuel and the maximum available payload up to maximum ramp weight. Range is based on arriving at destination with NBAA IFR fuel reserves, but only a 100-mi. alternate is required.

Ferry (multiengine piston airplanes and single-engine turboprops) — Based on one 170-lb. pilot, maximum fuel less 45-min. IFR fuel reserves.

Please note: None of the missions for piston-engine aircraft include fuel for diverting to an alternate. However, single-engine turboprops are required to have NBAA IFR fuel reserves, but only a 100-mi. alternate is required.

NBAA IFR range format cruise profiles, having a 200-mi. alternate, are used for Part 25 Transport Category turbine-powered aircraft. In the case of Part 23 turboprops, including those certificated in the Commuter Category, and Part 23 turbofan aircraft, only a 100-mi. alternate is needed. The difference in alternate requirements should be kept in mind when comparing range performance of various classes of aircraft.

Max Payload With Available Fuel (multiengine turbine airplanes) — Based on aircraft loaded to maximum zero fuel weight with maximum available fuel up to maximum ramp weight, less NBAA IFR fuel reserves at destination.

Max Fuel With Available Payload (multiengine turbine airplanes) — Based on BOW plus full fuel and maximum available payload up to maximum ramp weight. Range based on NBAA IFR reserves at destination.

Full/Max Fuel With Four Passengers (multiengine turbine airplanes) — Based on BOW plus four 200-lb. passengers and the lesser of full fuel or maximum available fuel up to maximum ramp weight. Ultra-long-range aircraft must have eight passengers on board.

Ferry (multiengine turbine airplanes) — Based on BOW, required crew and full fuel, arriving at destination with NBAA IFR fuel reserves.

We allow 2,000-ft. increment step climbs above the initial cruise altitude to improve specific range performance. The altitude shown in the range section is the highest cruise altitude for the trip — not the initial cruise or mid-mission altitude.

The range profiles are in **Nautical Miles,** and the **Average Speed** is computed by dividing that distance by the total flight time or weight-off-wheels time en route. The **Fuel Used** or **Trip Fuel** includes the fuel consumed for start, taxi, takeoff, cruise, descent and landing approach, but not after-landing taxi or reserves.

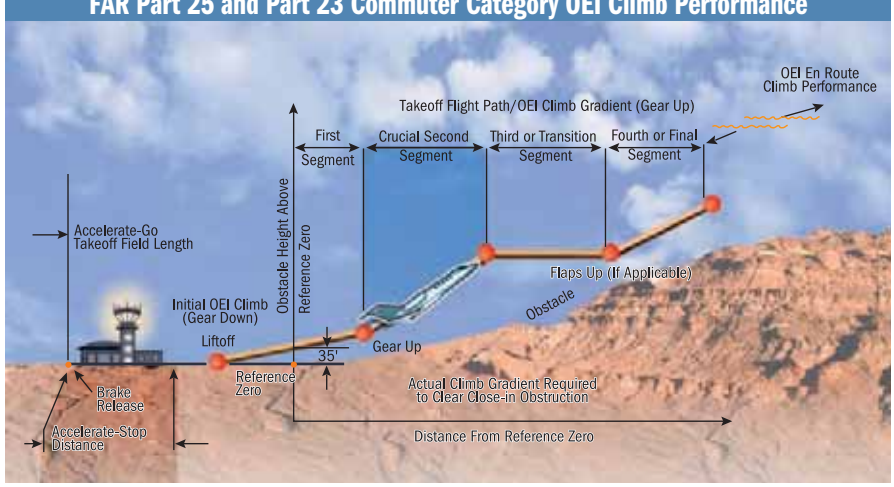
The **Specific Range** is obtained by dividing the distance flown by the total fuel burn. The altitude is the highest cruise altitude achieved on the specific mission profile shown.

Missions

Various paper missions are computed to illustrate the runway requirements, speeds, fuel burns and specific range, plus cruise altitudes. The mission ranges are chosen to be representative for the airplane category.

All fixed-distance missions are flown with four passengers on board, except for ultra-long-range airplanes, which have eight passengers on board. The pilot is counted as a passenger on board piston-engine airplanes. If an airplane cannot complete a specific fixed distance mission with the appropriate

FAR Part 25 and Part 23 Commuter Category OEI Climb Performance



payload, *BCA* shows a reduction of payload in the remarks section or marks the fields NP (Not Possible) at our option.

Runway performance is obtained from the Approved Airplane Flight Manual. Takeoff distance is listed for single-engine airplanes; accelerate/stop distance is listed for piston-twins and light turboprops; and take-off field length, which often corresponds to balanced field length, is used for Part 23 Commuter Category and Part 25 large Transport Category airplanes.

Flight Time (takeoff to touchdown, or weight-off-wheels, time) is shown for turbine airplanes. Some piston-engine manufacturers also include taxi time, resulting in a chock-to-chock, block time measurement. Fuel Used, though, is the actual block fuel burn for each type of aircraft, but it does not include fuel reserves. The cruise Altitude shown is that which is specified by the manufacturer for fixed-distance missions.

200 nm — Piston-engine airplanes.

500 nm — Piston-engine airplanes.

300 nm — Turbine-engine airplanes, except ultra-long-range.

600 nm — Turbine-engine airplanes, except ultra-long-range.

1,000 nm — All turbine-engine airplanes.

3,000 nm — Ultra-long-range, turbine-engine airplanes.

6,000 nm — Ultra-long-range, turbine-engine airplanes.

Remarks

In this section, *BCA* generally includes the base price, if it is available or applicable; the certification basis and year; and any notes about estimations, limitations or qualifications regarding specifications, performance or price.

All prices are in 2012 dollars, FOB at a U.S. delivery point, unless otherwise noted. The certification basis includes the regulation under which the airplane originally was type certificated, the year in which it originally was certificated and, if applicable, subsequent years during which the airplane was re-certificated.

"All data preliminary" indicates that actual aircraft weight, dimension and performance numbers may vary considerably after the model is certificated and delivery of completed aircraft begins. These aircraft are listed in italics.

General

The following abbreviations are used throughout the tables: "NA" means not available; "—" indicates the information is not applicable; and "NP" signifies that specific performance is not possible. BCA

BCA Required Equipment List

	Single-Engine Pistons	Single-Engine Pistons, Turbocharged	Single-Engine Pistons, Pressurized	Multiengine Pistons	Multiengine Pistons, Turbocharged	Single-Engine Turboprops	Turboprops ≤12,500 lb	Turboprops >12,500 lb	Jets <20,000 lb	Jets ≥20,000 lb
POWERPLANT SYSTEMS										
Batt temp indicator (nicad only, for each battery)							●	●	●	●
Engine synchronization									●	●
Fire detection, each engine							●	●	●	●
Fire extinguishing, each engine								●	●	●
Propeller, reversible pitch							●	●	●	
Propellers, synchronized								●	●	
Thrust reversers/attenuators									●	●
AVIONICS										
ADF							●	●	●	●
Air data computer								●	●	●
Altitude alerter							●	●	●	●
Altitude encoder	●	●	●	●	●	●	●	●	●	●
Antennas, headsets, microphones	●	●	●	●	●	●	●	●	●	●
Audio control panel	●	●	●	●	●	●	●	●	●	●
Automatic flight guidance, 2-axis, alt hold	●	●	●							
Automatic flight guidance, 3-axis, alt hold				●	●	●	●	●	●	●
DME						●	●	●	●	●
EFIS							●	●	●	●
ELT	●	●	●	●	●	●	●	●	●	●
Flight director							●	●	●	●
FMS, TSO C115 or GPS, TSO C129 IFR approach	●	●	●	●	●	●	●	●	●	●
Glideslope receiver	●	●	●	●	●	●	●	●	●	●
HSI, slaved (or equivalent EFIS function)	●	●	●	●	●	●	●	●	●	●
Marker beacon receiver	●	●	●	●	●	●	●	●	●	●
Radio altimeter						●	●	●	●	●
Radiotelephone								●	●	●
RMI (or equivalent function on EFIS display)						●	●	●	●	●
RVSM certification									●	●
TAWS									●	●
TCAS I/II (FAR Part 25 airplanes only)									●	●
Transponder	●	●	●	●	●	●	●	●	●	●
VHF comm, 25-kHz spacing	●	●	●	●	●	●	●	●	●	●
VHF comm, 8.33-kHz spacing									●	●
VHF nav, 360-channel	●	●	●	●	●	●	●	●	●	●
Weather radar						●	●	●	●	●
GENERAL										
Air conditioning, vapor cycle (not required with APU)			●			●	●	●	●	●
Anti-skid brakes								●	●	●
APU (required for air-start engines, ACM air conditioning)										●
Cabin/cockpit dividers								●	●	●
Corrosion-proofing, internal	●	●	●	●	●	●	●	●	●	●
Exterior paint, tinted windows	●	●	●	●	●	●	●	●	●	●
Fire extinguisher, cabin						●	●	●	●	●
Fire extinguisher, cockpit	●	●	●	●	●	●	●	●	●	●
Fuel tanks, long-range	●	●	●	●	●	●	●	●		
Ground power jack	●	●	●	●	●	●	●	●	●	●
Headrests, air vents, all seats	●	●	●	●	●	●	●	●	●	●
Lavatory								●	●	●
Lights, strobe/anti-collision beacon, navigation, landing/taxi	●	●	●	●	●	●	●	●	●	●
Lights, internally lighted instrument, cockpit flood, courtesy	●	●	●	●	●	●	●	●	●	●
Oxygen, supplemental, all seats		●			●	●	●	●	●	●
Refreshment center							●	●	●	●
Seats, crew, articulating	●	●	●	●	●	●	●	●	●	●
Seats, passenger, reclining	●	●	●	●	●	●	●	●	●	●
Shoulder harness, all seats and crew with inertia reel	●	●	●	●	●	●	●	●	●	●
Tables, cabin work						●	●	●	●	●
ICE AND RAIN PROTECTION										
Alternate static pressure source (not required with 2 DADC)	●	●	●	●	●	●	●			
Approval, flight into known icing			●	●	●	●	●	●	●	●
Ice protection plates							●	●		
Pitot heat	●	●	●	●	●	●	●	●	●	●
Static wicks	●	●	●	●	●	●	●	●	●	●
Windshield rain removal, mechanical or repellent coating							●	●	●	●
INSTRUMENTATION										
Angle-of-attack stall margin indicator									●	●
EGT	●	●	●	●	●					
IVSI (or equivalent EFIS, DADC function)							●	●	●	●
Outside air temperature gauge	●	●	●	●	●	●	●	●	●	●
Primary flight instruments	●	●	●	●	●	●	●	●	●	●

● Required ● Dual required

SINGLE-ENGINE PISTONS NORMALLY ASPIRATED

Manufacturer			Cirrus Design	Cessna	Piper Aircraft	Cirrus Design
Model			SR20	Skylane CE-182T	Arrow PA-28R-201	SR22
BCA Equipped Price			$289,900	$398,100	$414,900	$449,900
Characteristics		Seating	1+3/3	1+3/3	1+3/3	1+3/3
		Wing Loading	21.0	17.8	16.2	23.5
		Power Loading	15.25	13.48	13.75	10.97
		Noise (dBA)	83.4	77.7	77.7	83.7
External Dimensions (ft.)		Length	26.0	29.0	24.7	26.0
		Height	8.9	9.3	7.9	8.9
		Span	38.3	36.0	35.4	38.3
Internal Dimensions (ft.)		Length	8.0	7.2	7.7	8.0
		Height	4.1	4.0	3.7	4.1
		Width	4.1	3.5	3.5	4.1
Power		Engine	Cont IO-360-ES	Lyc IO-540-AB1A5	Lyc IO-360-C1C6	Cont IO-550-N
		Output (hp)	200	230	200	310
		Inspection Interval	2,000t	2,000t	2,000t	2,000t
Weights (lb.)		Max Ramp	3,050	3,110	2,758	3,400
		Max Takeoff	3,050	3,100	2,750	3,400
		Max Landing	3,050	2,950	2,750	3,400
		Zero Fuel	2,900c	2,983b	2,636b	3,400c
		EOW	2,128	1,984	1,798	2,293
		Max Payload	772	999	838	1,107
		Useful Load	922	1,126	960	1,107
		Max Baggage	130	200	200	130
		Max Fuel	336	522	432	552
		Available Payload w/Max Fuel	586	604	528	555
		Available Fuel w/Max Payload	150	127	122	0
Limits		V_{NE}	204	175	183	200
		V_{NO}	166	140	146	177
		V_A	131	110	118	133
Airport Performance		TO (SL elev./ISA temp.)	2,221	1,514	1,600	1,594
		TO (5,000' elev.@25C)	3,752	2,708	3,250	2,717
		V_{SO}	61	50	55	62
		V_X	83	65	78	78
		V_Y	96	80	90	101
Climb		Time to Climb (min.)/Altitude	16/FL 100	15/FL 100	16/FL 100	10/FL 100
		Initial Gradient (ft./nm)	581	694	560	864
Ceiling (ft.)		Service	17,500	18,100	16,200	17,500
Cruise	Long Range	TAS	140	125	124	162
		Fuel Flow	50	61	51	79
		Altitude	FL 080	FL 120	FL 100	FL 080
		Specific Range	2.800	2.049	2.431	2.051
	Recommended	TAS	152	135	130	172
		Fuel Flow	63	69	68	91
		Altitude	FL 080	FL 100	FL 090	FL 080
		Specific Range	2.413	1.957	1.912	1.890
	High Speed	TAS	159	140	137	181
		Fuel Flow	70	78	76	100
		Altitude	FL 80	FL 060	FL 060	FL 80
		Specific Range	2.271	1.795	1.803	1.810
Ranges	Seats Full	Nautical Miles	584	743	537	881
		Average Speed	140	120	121	162
		Fuel Used	210	388	156	431
		Specific Range/Altitude	2.781/FL 080	1.915/FL 120	3.442/FL 070	2.044/FL 080
	Tanks Full	Nautical Miles	764	927	926	1,017
		Average Speed	140	123	121	162
		Fuel Used	275	477	408	498
		Specific Range/Altitude	2.778/FL 080	1.943/FL 120	2.270/FL 070	2.042/FL 080
Missions (4 occupants)	200 nm	Runway	1,446	1,515	1,600	1,020
		Block Time	1+18	1+37	1+29	1+06
		Fuel Used	100	123	125	122
		Specific Range/Altitude	2.000/FL 080	1.626/FL 120	1.600/FL 070	1.639/FL 080
	500 nm	Runway	1,446	1,515	1,600	1,341
		Block Time	3+17	3+52	3+50	2+45
		Fuel Used	226	269	278	308
		Specific Range/Altitude	2.212/FL 080	1.859/FL 120	1.799/FL 090	1.623/FL 080
		Suggested Base Price	$289,900	$398,100	$434,275	$449,900
Remarks		Certification Basis	FAR 23, 1999 Includes Perspective Global Connect worldwide weather.	FAR 23, 1996/01 Includes Garmin G1000 with GFC700 autopilot.	CAR 3, 1976/01 Includes Garmin G500.	FAR 23, 2000 Includes Perspective Global Connect worldwide weather.

SINGLE-ENGINE PISTONS NORMALLY ASPIRATED

			Mooney	Mooney	Cessna	Hawker Beechcraft
Manufacturer						
Model			Ovation2 GX M-20R	Ovation3 M-20R	Stationair CE-206H	Bonanza G36 G36
BCA Equipped Price			$495,000	$520,000	$557,500	$765,900
Characteristics		Seating	1+3/4	1+3/4	1+5/5	1+4/5
		Wing Loading	19.3	19.3	20.7	20.2
		Power Loading	12.03	10.86	12.00	12.17
		Noise (dBA)	78.7	NA	84.5	76.7
External Dimensions (ft.)		Length	26.9	26.9	28.3	27.5
		Height	8.3	8.3	9.3	8.6
		Span	36.1	36.1	36.0	33.5
Internal Dimensions (ft.)		Length	8.1	8.1	9.3	12.6
		Height	3.7	3.7	4.1	4.2
		Width	3.6	3.6	3.7	3.5
Power		Engine	Cont IO-550-G	Cont IO-550-G-AP	Lyc IO-540-AC1A5	Cont IO-550-B
		Output (hp)	280	310	300	300
		Inspection Interval	2,000t	2,000t	2,000t	1,700t
Weights (lb.)		Max Ramp	3,374	3,374	3,614	3,663
		Max Takeoff	3,368	3,368	3,600	3,650
		Max Landing	3,200	3,200	3,600	3,650
		Zero Fuel	3,224b	3,197b	3,449b	3,509b
		EOW	2,260	2,260	2,241	2,605
		Max Payload	964	937	1,208	904
		Useful Load	1,114	1,114	1,373	1,058
		Max Baggage	120	120	180	670
		Max Fuel	600	600	522	444
		Available Payload w/Max Fuel	514	514	851	614
		Available Fuel w/Max Payload	150	177	166	154
Limits		V_{NE}	195	195	182	203
		V_{NO}	174	174	149	165
		V_A	127	127	125	139
Airport Performance		TO (SL elev./ISA temp.)	1,620	1,620	1,860	1,913
		TO (5,000' elev.@25C)	2,500	2,500	3,670	4,145
		V_{SO}	59	59	57	59
		V_X	80	80	70	84
		V_Y	105	105	86	100
Climb		Time to Climb (min.)/Altitude	12/FL 100	10/FL 100	15/FL 100	14/FL 100
		Initial Gradient (ft./nm)	714	NA	691	730
Ceiling (ft.)		Service	20,000	NA	15,700	18,500
Cruise	Long Range	TAS	163	163	127	137
		Fuel Flow	50	50	78	56
		Altitude	FL 120	FL 120	FL 120	FL 120
		Specific Range	3.260	3.260	1.628	2.446
	Recommended	TAS	186	186	135	163
		Fuel Flow	84	84	88	80
		Altitude	FL 120	FL 120	FL 080	FL 100
		Specific Range	2.214	2.214	1.534	2.038
	High Speed	TAS	190	196	142	174
		Fuel Flow	96	114	101	94
		Altitude	FL 080	FL 120	FL 060	FL 080
		Specific Range	1.979	1.719	1.406	1.851
Ranges	Seats Full	Nautical Miles	1,075	1,075	487	349
		Average Speed	161	161	124	130
		Fuel Used	438	438	339	165
		Specific Range/Altitude	2.454/FL 120	2.454/FL 120	1.437/FL 120	2.115/FL 040
	Tanks Full	Nautical Miles	1,465	1,465	690	929
		Average Speed	173	173	125	140
		Fuel Used	558	558	464	403
		Specific Range/Altitude	2.625/FL 120	2.625/FL 120	1.487/FL 120	2.305/FL 080
Missions (4 occupants)	200 nm	Runway	1,230	1,230	1,860	1,800
		Block Time	1+13	1+13	1+38	1+11
		Fuel Used	115	115	157	130
		Specific Range/Altitude	1.739/FL 050	1.739/FL 050	1.274/FL 120	1.538/FL 060
	500 nm	Runway	1,290	1,290	1,860	1,900
		Block Time	2+58	2+58	3+55	2+54
		Fuel Used	221	221	339	304
		Specific Range/Altitude	2.262/FL 100	2.262/FL 100	1.475/FL 120	1.645/FL 060
		Suggested Base Price	$495,000	$520,000	$557,500	$759,000
Remarks		Certification Basis	CAR 3/FAR 23, 1955/94 Includes Garmin G1000.	CAR 3/FAR 23, 1955/94; STC SA02483CH Includes Garmin G1000.	FAR 23, 1998 Includes Garmin G1000 with GFC700 autopilot.	CAR 3, 1956/69/83/05 Restyled interior; new, lightweight A/C system; Garmin G1000 with SVS.

SINGLE-ENGINE PISTONS TURBOCHARGED

Manufacturer			Cessna	Cirrus	Cessna	Mooney	Cessna
Model			Turbo Skylane CE-T182T	SR22T SR 22	Turbo Stationair CE-T206H	Acclaim Type S M0-20TN	Corvalis TTX LC41-550-FG
BCA Equipped Price			$432,800	$544,900	$597,500	$635,000	$733,950
Characteristics		Seating	1+3/3	1+3/3	1+5/5	1+3/3	1+3/3
		Wing Loading	17.8	23.5	20.7	19.2	25.5
		Power Loading	13.19	10.79	11.61	12.03	11.61
		Noise (dBA)	75.4	80.3	75.8	78.0	81.5
External Dimensions (ft.)		Length	29.0	26.0	28.3	26.9	25.2
		Height	9.3	8.9	9.3	8.3	9.0
		Span	36.0	38.3	36.0	36.4	36.0
Internal Dimensions (ft.)		Length	7.2	8.0	9.3	8.1	7.9
		Height	4.0	4.1	4.1	3.7	4.1
		Width	3.5	4.1	3.7	3.6	4.0
Power		Engine	Lyc TIO-540-AK1A	Cont TSIO-550-K	Lyc TIO-540-AJ1A	Cont TSIO-550-G	Cont TSIO-550-C
		Output (hp)	235	315	310	280	310
		Inspection Interval	2,000t	2,000t	2,000t	2,000t	2,000t
Weights (lb.)		Max Ramp	3,112	3,400	3,617	3,374	3,600
		Max Takeoff	3,100	3,400	3,600	3,368	3,600
		Max Landing	2,950	3,400	3,600	3,200	3,420
		Zero Fuel	2,953b	3,400c	3,426b	3,173b	3,300c
		EOW	2,082	2,375	2,349	2,378	2,600
		Max Payload	871	1,025	1,077	795	700
		Useful Load	1,030	1,025	1,268	996	1,000
		Max Baggage	200	130	180	120	120
		Max Fuel	522	552	522	612	612
		Available Payload w/Max Fuel	508	473	746	384	388
		Available Fuel w/Max Payload	159	0	191	201	300
Limits		V_{NE}	175	200	182	195	230
		V_{NO}	140	177	149	174	181
		V_A	110	133	125	127	158
Airport Performance		TO (SL elev./ISA Temp.)	1,385	1,267	1,740	2,100	1,900
		TO (5,000' elev.@25C)	1,928	1,591	2,470	3,100	2,460
		V_{SO}	50	61	57	60	61
		V_X	64	78	69	80	82
		V_Y	84	101	89	105	110
Climb		Time to Climb (min.)/Altitude	10/FL 100	8/FL 100	11/FL 100	7/FL 100	8/FL 100
		Initial Gradient (ft./nm)	743	832	724	770	701
Ceilings (ft.)		Certificated	20,000	25,000	25,000	25,000	25,000
		Service	20,000	25,000	27,000	25,000	25,000
Cruise	Long Range	TAS	132	175	137	215	208
		Fuel Flow	62	76	85	99	90
		Altitude	FL 200	FL 250	FL 240	FL 250	FL 250
		Specific Range	2.129	2.303	1.612	2.172	2.311
	Recommended	TAS	152	203	155	227	227
		Fuel Flow	77	98	99	128	101
		Altitude	FL 200	FL 250	FL 240	FL 180	FL 250
		Specific Range	1.974	2.071	1.566	1.773	2.248
	High Speed	TAS	165	214	164	242	235
		Fuel Flow	98	110	116	130	150
		Altitude	FL 200	FL 250	FL 200	FL 250	FL 250
		Specific Range	1.684	1.945	1.414	1.862	1.567
Ranges	Seats Full	Nautical Miles	520	620	233	500	475
		Average Speed	134	175	137	178	198
		Fuel Used	291	288	220	259	262
		Specific Range/Altitude	1.787/FL 200	2.153/FL 250	1.059/FL 240	1.931/FL 160	1.813/FL 250
	Tanks Full	Nautical Miles	915	1,046	618	1,122	1,254
		Average Speed	134	175	137	200	204
		Fuel Used	476	477	459	539	554
		Specific Range/Altitude	1.922/FL 200	2.193/FL 250	1.346/FL 240	2.082/FL 250	2.264/FL 250
Missions (4 occupants)	200 nm	Runway	1,385	1,009	1,743	1,300	1,900
		Block Time	1+24	1+10	1+25	1+05	1+01
		Fuel Used	144	131	170	139	125
		Specific Range/Altitude	1.389/FL 120	1.527/FL 100	1.176/FL 120	1.439/FL 120	1.600/FL 120
	500 nm	Runway	1,385	1,267	1,743	1,380	1,900
		Block Time	3+14	2+42	3+21	2+54	2+31
		Fuel Used	319	295	373	259	271
		Specific Range/Altitude	1.567/FL 200	1.695/FL 180	1.340/FL 240	1.931/FL 250	1.845/FL 250
		Suggested Base Price	$443,500	$544,900	$597,500	$635,000	$733,950
Remarks		Certification Basis	FAR 23, 2001 Includes Garmin G1000 with GFC700 autopilot.	FAR 23, 2010 Includes Perspective Global Connect world-wide weather.	FAR 23, 1998 Includes Garmin G1000 with GFC700 autopilot.	CAR 3, 1955/89/06 Includes Garmin G1000.	FAR 23 Includes Garmin G2000 with GFC700 autopilot.

SINGLE-ENGINE PISTONS PRESSURIZED

Manufacturer			Piper Aircraft	Piper Aircraft
Model			Malibu Matrix PA-46R-350	Malibu Mirage PA-46-350P
BCA Equipped Price			$903,800	$1,110,400
Characteristics		Seating	1+4/5	1+4/5
		Wing Loading	24.8	24.8
		Power Loading	12.40	12.40
		Noise (dBA)	81.0	81.0
External Dimensions (ft.)		Length	28.9	28.9
		Height	11.3	11.3
		Span	43.0	43.0
Internal Dimensions (ft.)		Length	12.4	12.4
		Height	3.9	3.9
		Width	4.2	4.2
Power		Engine	Lyc TIO-540-AE2A	Lyc TIO-540-AE2A
		Output (hp)	350	350
		Inspection Interval	2,000t	2,000t
Weights (lb.)		Max Ramp	4,358	4,358
		Max Takeoff	4,340	4,340
		Max Landing	4,123	4,123
		Zero Fuel	4,123c	4,123c
		EOW	2,969	3,146
		Max Payload	1,154	977
		Useful Load	1,389	1,212
		Max Baggage	200	200
		Max Fuel	720	720
		Available Payload w/Max Fuel	669	492
		Available Fuel w/Max Payload	235	235
Limits		V_{NE}	198	198
		V_{NO}	168	168
		V_A	133	133
		PSI	5.5	5.5
Airport Performance		TO (SL elev./ISA temp.)	2,090	2,090
		TO (5,000' elev.@25C)	2,977	2,977
		V_{SO}	58	58
		V_X	81	81
		V_Y	110	110
Climb		Time to Climb (min.)/Altitude	8/FL 100	8/FL 100
		Initial Gradient (ft./nm)	703	703
Ceilings (ft.)		Certificated	25,000	25,000
		Service	25,000	25,000
		Sea-Level Cabin	—	12,300
Cruise	Long Range	TAS	156	156
		Fuel Flow	66	66
		Altitude	FL 250	FL 250
		Specific Range	2.364	2.364
	Recommended	TAS	203	203
		Fuel Flow	108	108
		Altitude	FL 250	FL 250
		Specific Range	1.880	1.880
	High Speed	TAS	213	213
		Fuel Flow	120	120
		Altitude	FL 250	FL 250
		Specific Range	1.775	1.775
Ranges	Seats Full	Nautical Miles	867	535
		Average Speed	151	138
		Fuel Used	457	312
		Specific Range/Altitude	1.897/FL 200	1.715/FL 120
	Tanks Full	Nautical Miles	1,343	1,343
		Average Speed	158	159
		Fuel Used	658	670
		Specific Range/Altitude	2.041/FL 250	2.004/FL 250
Missions (4 occupants)	200 nm	Runway	2,090	2,090
		Block Time	1+07	1+06
		Fuel Used	168	167
		Specific Range/Altitude	1.190/FL 120	1.198/FL 200
	500 nm	Runway	2,090	2,090
		Block Time	2+31	2+31
		Fuel Used	350	350
		Specific Range/Altitude	1.429/FL 250	1.429/FL 250
		Suggested Base Price	$903,800	$1,037,400
Remarks		Certification Basis	FAR 23, 1983/88 Includes Garmin G1000; FIKI optional.	FAR 23, 1983/88 Includes Garmin G1000 and FIKI.

MULTIENGINE PISTONS NORMALLY ASPIRATED

Manufacturer			Vulcanair SpA	Vulcanair SpA
Model			P.68C P 68C	Victor P 68R
BCA Equipped Price			$750,600	$750,600
Characteristics		Seating	1+5/6	1+5/6
		Wing Loading	22.9	21.6
		Power Loading	11.49	10.80
		Noise (dBA)	74.7	74.7
External Dimensions (ft.)		Length	31.3	31.3
		Height	11.2	11.2
		Span	39.4	39.4
Internal Dimensions (ft.)		Length	10.6	10.6
		Height	3.9	3.9
		Width	3.8	3.8
Power		Engines	2 Lyc IO-360-A1B6	2 Lyc IO-360-A1B6
		Output (hp each)	200	200
		Inspection Interval	2,000t	2,000t
Weights (lb.)		Max Ramp	4,630	4,357
		Max Takeoff	4,594	4,321
		Max Landing	4,365	4,321
		Zero Fuel	4,167c	4,147b
		EOW	3,153	3,197
		Max Payload	1,014	950
		Useful Load	1,477	1,160
		Executive Payload	1,020	1,020
		Max Fuel	1,063	1,063
		Payload – Max Fuel	415	98
		Available Fuel w/Max Payload	463	210
		Available Fuel w/Executive Payload	457	140
Limits		V_{NE}	194	193
		V_{NO}	154	153
		V_A	132	125
Airport Performance		TO (SL elev./ISA Temp.)	1,312	1,260
		TO (5,000' elev.@25C)	4,000	4,000
		A/S (SL elev./ISA)	2,149	2,300
		A/S (5,000' elev.@25C)	2,854	4,025
		V_{MCA}	60	60
		V_{DEC}	70	70
		V_{XSE}	82	82
		V_{YSE}	88	88
Climb		Time to Climb (min.)/Altitude	12/FL 100	12/FL 100
		Initial Engine-Out Rate (fpm)	217	217
		Initial All-Engine Gradient (ft./nm)	1,100	920
		Initial Engine-Out Gradient (ft./nm)	147	147
Ceilings (ft.)		Certificated	—	—
		All-Engine Service	18,000	20,000
		Engine-Out Service	5,000	5,650
Cruise	Long Range	TAS	144	144
		Fuel Flow	94	94
		Altitude	FL 080	FL 080
		Specific Range	1.532	1.532
	Recommended	TAS	155	155
		Fuel Flow	108	108
		Altitude	FL 080	FL 080
		Specific Range	1.435	1.435
	High Speed	TAS	162	162
		Fuel Flow	116	116
		Altitude	FL 080	FL 080
		Specific Range	1.397	1.397
Ranges	Executive Payload	Nautical Miles	575	575
		Average Speed	145	145
		Trip Fuel	395	395
		Specific Range/Altitude	1.456/FL 080	1.456/FL 080
	Ferry	Nautical Miles	855	855
		Average Speed	145	145
		Trip Fuel	561	561
		Specific Range/Altitude	1.524/FL 080	1.524/FL 080
Missions (4 occupants)	200 nm	Runway	1,450	1,450
		Block Time	1+28	1+28
		Fuel Used	140	140
		Specific Range/Altitude	1.429/FL 080	1.429/FL 080
	500 nm	Runway	1,500	1,500
		Block Time	3+25	3+25
		Fuel Used	375	375
		Specific Range/Altitude	1.333/FL 080	1.333/FL 080
		Suggested Base Price	$599,000	$599,000
Remarks		Certification Basis	FAR 23, 1976/80 SAGEM glass cockpit; GNS430W; STEC 55X.	EASA 23, 2009 SAGEM glass cockpit; GNS430W; STEC 55X.

MULTIENGINE PISTONS NORMALLY ASPIRATED

			Manufacturer	Hawker Beechcraft
			Model	Baron G58 G58
			BCA Equipped Price	$1,373,900
Characteristics			Seating	1+4/5
			Wing Loading	27.6
			Power Loading	9.17
			Noise (dBA)	77.6
External Dimensions (ft.)			Length	29.8
			Height	9.8
			Span	37.8
Internal Dimensions (ft.)			Length	12.6
			Height	4.2
			Width	3.5
Power			Engines	2 Cont IO-550-C
			Output (hp each)	300
			Inspection Interval	1,700t
Weights (lb.)			Max Ramp	5,524
			Max Takeoff	5,500
			Max Landing	5,400
			Zero Fuel	5,215b
			EOW	4,000
			Max Payload	1,215
			Useful Load	1,524
			Executive Payload	850
			Max Fuel	1,164
			Payload – Max Fuel	360
			Available Fuel w/Max Payload	309
			Available Fuel w/Executive Payload	674
Limits			V_{NE}	223
			V_{NO}	195
			V_A	165
Airport Performance			TO (SL elev./ISA Temp.)	2,300
			TO (5,000' elev.@25C)	4,000
			A/S (SL elev./ISA)	3,000
			A/S (5,000' elev.@25C)	4,330
			V_{MCA}	84
			V_{DEC}	85
			V_{XSE}	100
			V_{YSE}	101
Climb			Time to Climb (min.)/Altitude	10/FL 100
			Initial Engine-Out Rate (fpm)	390
			Initial All-Engine Gradient (ft./nm)	988
			Initial Engine-Out Gradient (ft./nm)	232
Ceilings (ft.)			Certificated	—
			All-Engine Service	20,688
			Engine-Out Service	7,284
Cruise	Long Range		TAS	163
			Fuel Flow	106
			Altitude	FL 120
			Specific Range	1.538
	Recommended		TAS	193
			Fuel Flow	150
			Altitude	FL 100
			Specific Range	1.287
	High Speed		TAS	200
			Fuel Flow	190
			Altitude	FL 080
			Specific Range	1.053
Ranges	Executive Payload		Nautical Miles	817
			Average Speed	154
			Trip Fuel	591
			Specific Range/Altitude	1.382/FL 040
	Ferry		Nautical Miles	1,562
			Average Speed	164
			Trip Fuel	1,081
			Specific Range/Altitude	1.445/FL 120
Missions (4 occupants)	200 nm		Runway	2,850
			Block Time	1+02
			Fuel Used	227
			Specific Range/Altitude	0.881/FL 060
	500 nm		Runway	2,900
			Block Time	2+31
			Fuel Used	531
			Specific Range/Altitude	0.942/FL 060
			Suggested Base Price	$1,367,000
Remarks			Certification Basis	CAR 3 1957/69/83/05 Restyled interior; new, lightweight A/C; Garmin G1000 with SVS.

MULTIENGINE PISTONS TURBOCHARGED

			Manufacturer	Vulcanair SpA	Piper Aircraft
			Model	P 68C-TC P 68C-TC	Seneca V PA-34-220T
			BCA Equipped Price	$797,000	$998,950
Characteristics			Seating	1+5/5	1+4/5
			Wing Loading	20.7	22.8
			Power Loading	10.45	10.80
			Noise (dBA)	74.7	75.6
External Dimensions (ft.)			Length	37.6	28.6
			Height	11.2	9.9
			Span	39.4	38.9
Internal Dimensions (ft.)			Length	10.6	10.4
			Height	3.9	3.6
			Width	3.8	4.1
Power			Engines	2 Lyc TIO-360-C1A6D	2 Cont TSIO-360-RB
			Output (hp each)	210	220
			Inspection Interval	2,000t	1,800t
Weights (lb.)			Max Ramp	4,442	4,773
			Max Takeoff	4,387	4,750
			Max Landing	4,365	4,513
			Zero Fuel	4,140b	4,479c
			EOW	2,976	3,491
			Max Payload	1,164	988
			Useful Load	1,466	1,282
			Executive Payload	1,020	850
			Max Fuel	1,146	732
			Payload – Max Fuel	320	550
			Available Fuel w/Max Payload	302	294
			Available Fuel w/Executive Payload	446	432
Limits			V_{NE}	193	204
			V_{NO}	153	164
			V_A	126	139
			PSI	—	—
Airport Performance			TO (SL elev./ISA temp.)	1,260	1,707
			TO (5,000' elev.@25C)	2,200	2,435
			A/S (SL elev./ISA)	2,300	2,510
			A/S (5,000' elev.@25C)	3,000	3,117
			V_{MCA}	63	66
			V_{DEC}	NA	73
			V_{XSE}	NA	83
			V_{YSE}	NA	88
Climb			Time to Climb (min.)/Altitude	10/FL 100	7/FL 100
			Initial Engine-Out Rate (fpm)	240	253
			Initial All-Engine Gradient (ft./nm)	1,400	996
			Initial Engine-Out Gradient (ft./nm)	NA	173
Ceilings (ft.)			Certificated	20,000	25,000
			All-Engine Service	20,000	25,000
			Engine-Out Service	11,500	16,500
			Sea-Level Cabin	—	—-
Cruise	Long Range		TAS	144	167
			Fuel Flow	100	108
			Altitude	FL 080	FL 230
			Specific Range	1.440	1.546
	Recommended		TAS	155	196
			Fuel Flow	125	144
			Altitude	FL 080	FL 250
			Specific Range	1.240	1.361
	High Speed		TAS	162	200
			Fuel Flow	150	156
			Altitude	FL 080	FL 230
			Specific Range	1.080	1.282
Ranges	Executive Payload		Nautical Miles	1,050	449
			Average Speed	145	153
			Trip Fuel	942	348
			Specific Range/Altitude	1.115/FL 080	1.290/FL 130
	Ferry		Nautical Miles	1,100	866
			Average Speed	145	160
			Trip Fuel	950	648
			Specific Range/Altitude	1.158/FL 080	1.336/FL 180
Missions (4 occupants)	200 nm		Runway	NA	1,520
			Block Time	1+28	1+10
			Fuel Used	260	213
			Specific Range/Altitude	0.769/FL 080	0.939/FL 120
	500 nm		Runway	NA	1,610
			Block Time	3+25	2+41
			Fuel Used	485	476
			Specific Range/Altitude	1.031/FL 080	1.050/FL 200
			Suggested Base Price	$749,000	$935,000
Remarks			Certification Basis	FAR 23, 1982 Data *BCA* estimate; includes SAGEM glass cockpit.	FAR 23, 1971/80/97 Includes Garmin G600.

SINGLE-ENGINE TURBOPROPS

Manufacturer		Quest Aircraft	Cessna	Piper Aircraft	Cessna	Socata	Pilatus
Model		Kodiak Kodiak 100	Caravan CE-208-675	Meridian PA-46-500TP	Grand Caravan CE-208B	TBM 850 TBM 700 N	PC-12 NG PC-12/47E
BCA Equipped Price		$1,960,125	$2,132,000	$2,151,050	$2,254,000	$3,367,947	$4,581,742
Characteristics	Seating	1+5/9	1+9/13*	1+4/5	1+9/13*	1+5/6	1+7/10
	Wing Loading	30.2	28.6	27.8	31.3	38.2	37.6
	Power Loading	9.67	11.85	10.18	12.96	10.56	8.71
	Noise (dBA)	84.4	79.0	76.8	82.7	76.2	76.9
External Dimensions (ft.)	Length	33.8	37.6	29.6	41.6	34.9	47.3
	Height	15.3	14.9	11.3	15.5	14.3	14.0
	Span	45.0	52.1	43.0	52.1	41.6	53.3
Internal Dimensions (ft.)	Length	15.8	12.7	12.3	16.7	15.0	16.9
	Height	4.8	4.5	3.9	4.5	4.1	4.8
	Width	4.5	5.3	4.1	5.3	4.0	5.0
Power	Engine	P&WC PT6A-34	P&WC PT6A-114A	P&WC PT6A-42A	P&WC PT6A-114A	P&WC PT6A-66D	P&WC PT6A-67P
	Output (shp)/Flat Rating	750/ISA+7C	675/ISA+27C	500/ISA+55C	675/ISA+27C	700*/ISA+49C	1,200/ISA+35C
	Inspection Interval	4,000t	3,600t	3,600t	3,600t	3,000t	3,500t
Weights (lb.)	Max Ramp	7,305	8,035	5,134	8,785	7,430	10,495
	Max Takeoff	7,255	8,000	5,092	8,750	7,394	10,450
	Max Landing	6,690	7,800	4,850	8,500	7,024	9,921
	Zero Fuel	6,490c	7,432b	4,850c	8,182b	6,032c	9,039c
	BOW	4,428	4,940	3,644	5,270	4,780	6,782
	Max Payload	2,062	2,492	1,206	2,912	1,252	2,257
	Useful Load	2,877	3,095	1,490	3,515	2,650	3,713
	Executive Payload	1,000	1,800	800	1,800	1,000	1,400
	Max Fuel	2,144	2,224	1,140	2,224	2,017	2,704
	Available Payload w/Max Fuel	733	871	350	1,291	633	1,009
	Available Fuel w/Max Payload	815	604	284	604	1,398	1,456
	Available Fuel w/Executive Payload	1,877	1,295	690	1,715	1,650	2,313
Limits	V_{MO}	180	175	188	175	266	240
	V_A	143	150	127	148	160	163
	PSI	—	—	5.5	—	6.2	5.8
Airport Performance	TO (SL elev./ISA temp.)	1,468	2,055	2,438	2,420	2,840	2,650
	TO (5,000' elev.@25C)	2,396	2,973	3,691	3,604	4,282	4,450
	V_{SO}	60	61	69	61	65	67
	V_X	73	90	95	68	100	120
	V_Y	101	107	125	104	124	130
Climb	Time to Climb (min.)/Altitude	9/FL 100	9/FL 100	19/FL 250	12/FL 100	14/FL 250	21/FL 250
	Initial Gradient (ft./nm)	915	771	753	619	990	833
Ceilings (ft.)	Certificated	25,000	25,000	30,000	25,000	31,000	30,000
	Service	25,000	25,000	30,000	23,700	31,000	30,000
	Sea-Level Cabin	—	—	12,300	—	14,390	13,100
Cruise	Long Range: TAS	139	156	179	157	255	208
	Long Range: Fuel Flow	229	281	135	296	260	248
	Long Range: Altitude	FL 100	FL 100	FL 280	FL 100	FL 310	FL 300
	Long Range: Specific Range	0.607	0.555	1.326	0.530	0.981	0.839
	High Speed: TAS	171	186	257	181	320	280
	High Speed: Fuel Flow	326	379	241	379	436	491
	High Speed: Altitude	FL 100	FL 100	FL 280	FL 100	FL 260	FL 200
	High Speed: Specific Range	0.525	0.491	1.066	0.478	0.734	0.570
NBAA IFR Ranges (100-nm alternate)	Executive Payload (w/available fuel): Nautical Miles	1,079	450	699	640	1,150	1,402
	Executive Payload (w/available fuel): Average Speed	139	155	180	155	301	256
	Executive Payload (w/available fuel): Trip Fuel	1,907	866	649	1,272	1,490	2,020
	Executive Payload (w/available fuel): Specific Range/Altitude	0.566/FL 100	0.520/FL 100	1.077/FL 280	0.503/FL 100	0.772/FL 310	0.694/FL 300
	Max Fuel (w/available payload): Nautical Miles	1,079	974	953	916	1,450	1,544
	Max Fuel (w/available payload): Average Speed	139	156	180	156	253	257
	Max Fuel (w/available payload): Trip Fuel	1,907	1,803	841	1,788	1,677	2,207
	Max Fuel (w/available payload): Specific Range/Altitude	0.566/FL 100	0.540/FL 100	1.133/FL 280	0.512/FL 100	0.865/FL 310	0.700/FL 300
	Ferry: Nautical Miles	1,181	974	1,072	928	1,452	1,582
	Ferry: Average Speed	142	156	220	156	253	263
	Ferry: Trip Fuel	1,907	1,807	978	1,801	1,677	2,215
	Ferry: Specific Range/Altitude	0.619/FL 160	0.539/FL 100	1.096/FL 280	0.515/FL 100	0.866/FL 310	0.714/FL 300
Missions (4 passengers)	300 nm: Runway	937	1,468	2,250	1,498	1,880	1,650
	300 nm: Flight Time	1+49	1+40	1+22	1+43	1+01	1+11
	300 nm: Fuel Used	583	648	379	666	480	520
	300 nm: Specific Range/Altitude	0.515/FL 100	0.463/FL 100	0.792/FL 280	0.450/FL 100	0.625/FL 260	0.577/FL 260
	600 nm: Runway	975	1,680	2,400	1,724	2,100	1,850
	600 nm: Flight Time	3+38	3+17	2+32	3+23	1+59	2+18
	600 nm: Fuel Used	1,166	1,260	661	1,296	900	947
	600 nm: Specific Range/Altitude	0.515/FL 100	0.476/FL 100	0.908/FL 280	0.463/FL 100	0.667/FL 280	0.634/FL 270
	1,000 nm: Runway	1,467	NP	2,438	NP	2,450	2,100
	1,000 nm: Flight Time	5+54	NP	4+34	NP	3+15	3+49
	1,000 nm: Fuel Used	1,907	NP	920	NP	1,430	1,489
	1,000 nm: Specific Range/Altitude	0.524/FL 100	NP	1.087/FL 280	NP	0.699/FL 280	0.672/FL 280
	Suggested Base Price	$1,750,000	$1,866,550	$2,133,650	$1,999,000	$3,130,967	$3,810,000
Remarks	Certification Basis	FAR 23, 2007 Normal category; includes Garmin G1000.	FAR 23, 1984/98 *Export only; includes Garmin G1000 with GFC700 autopilot.	FAR 23 A 52 *1,000-nm, 3-passenger mission; includes Garmin G1000.	FAR 23, 1986 *Export only; includes Garmin G1000 with GFC700 autopilot.	FAR 23, 1990/03/06/07 *850 shp max cont. w/flaps retracted; RVSM; Garmin G1000; SVT; 5-year system warranty.	FAR 23, 1996/05/08 Honeywell Primus APEX SmartView; BMW Designworks interior.

MULTIENGINE TURBOPROPS 12,500-LB. MTOW OR LESS

Manufacturer			***Evektor***	**Vulcanair SpA**	**Hawker Beechcraft**	**Reims Aviation SA**	**Hawker Beechcraft**	**Piaggio Aero**
Model			***Outback EV-55***	**Viator AP68TP-600**	**King Air C90GTx C90GTi**	**Caravan II F406**	**King Air 250 B200GT**	**Avanti II P180**
***BCA* Equipped Price**			*$2,250,000*	$2,546,000	$3,834,000	$4,250,000	$6,015,500	$7,195,000
Characteristics		Seating	*1+9/14*	1+7/10	1+7/8	1+8/13	1+8/10	1+7/9
		Wing Loading	*37.4*	33.0	34.4	38.9	40.3	70.3
		Power Loading	*9.46*	10.08	9.53	9.85	7.35	7.12
		Noise (dBA)	*NA*	71.7	76.0	69.9	TBD	75.0
External Dimensions (ft.)		Length	*46.6*	37.0	35.5	39.1	43.8	47.3
		Height	*16.8*	11.9	14.3	13.2	14.8	13.0
		Span	*53.2*	39.4	50.3	49.5	57.9	46.0
Internal Dimensions (ft.)		**Length:** OA/Net	*20/16.5*	17.2/11.9	12.4/12.4	14.2/12.8	16.7/16.7	17.5/17.5
		Height	*4.5*	4.1	4.8	4.3	4.8	5.8
		Width: Max/Floor	*5.3/4.7*	3.7/3.7	4.5/4.1	4.7/4.7	4.5/4.1	6.1/3.5
Power		Engines	*2 P&WC PT6A-21*	2 RR 250 B17C	2 P&WC PT6A-135A	2 P&WC PT6A-112	2 P&WC PT6A-52	2 P&WC PT6A-66B
		Output (shp each)/Flat Rating	*536/ISA+15C*	328/ISA+25C	550/ISA+30C	500/ISA+22C	850/ISA+37C	850/ISA+28C
		Inspection Interval	*3,600t*	3,500t	3,600t	3,600t	3,600t	3,600t*
Weights (lb.)		Max Ramp	*10,207*	6,669	10,545	9,925	12,590	12,150
		Max Takeoff	*10,141*	6,613	10,485	9,850	12,500	12,100
		Max Landing	*10,141*	6,283	9,700	9,360	12,500	11,500
		Zero Fuel	*9,810c*	5,621c	9,378c	8,500c	11,000c	9,800c
		BOW	*5,965*	3,770	7,235	5,732	8,780	8,375
		Max Payload	*3,845*	1,851	2,143	2,768	2,220	1,425
		Useful Load	*4,242*	2,899	3,310	4,193	3,810	3,775
		Executive Payload	*1,800*	1,400	1,400	1,600	1,600	1,400
		Max Fuel	*3,413*	1,487	2,573	3,183	3,645	2,802
		Available Payload w/Max Fuel	*829*	1,412	737	1,010	165	973
		Available Fuel w/Max Payload	*397*	1,048	1,167	1,425	1,590	2,350
		Available Fuel w/Executive Payload	*2,442*	1,487	1,910	2,593	2,210	2,375
Limits		V_{MO}	*205*	200	226	213	260	260
		V_A	*140*	141	169	160	182	202
		PSI	—	—	5.0	—	6.5	9.0
Airport Performance		TO (SL elev./ISA temp.)	*1,378*	2,034	2,392	2,964	2,111	3,262
		TO (5,000' elev.@25C)	*1,837*	2,950	3,372	4,106	3,099	4,700
		A/S (SL elev./ISA temp.)	*1,722*	2,887	3,382	4,746	3,687	5,750
		A/S (5,000' elev.@25C)	*2,395*	3,740	4,411	6,215	4,859	7,400
		V_{MCA}	*66*	77	80	90	86	100
		V_{DEC}	*79*	85	97	101	94	106
		V_{XSE}	*92*	90	100	105	115	132
		V_{YSE}	*95*	105	108	115	121	140
Climb		Time to Climb (min.)/Altitude	*6/FL 010*	7/FL 100	17/FL 250	6/FL 100	13/FL 250	10/FL 250
		Initial Engine-Out Rate (fpm)	*290*	270	474	310	682	670
		Initial All-Engine Gradient (ft./nm)	*1,107*	1,500	1,953	910	1,170	1,106
		Initial Engine-Out Gradient (ft./nm)	*219*	180	259	170	364	287
Ceilings (ft.)		Certificated	*24,000*	25,000	30,000	30,000	35,000	41,000
		All-Engine Service	*24,000*	25,000	30,000	30,000	35,000	39,400
		Engine-Out Service	*15,420*	11,400	19,170	14,550	26,000	23,800
		Sea-Level Cabin	—	—	11,065	—	15,293	24,000
Cruise	**Long Range**	TAS	*180*	169	208	184	256	318
		Fuel Flow	*432*	261	332	412	430	408
		Altitude	*FL 010*	FL 100	FL 260	FL 100	FL 350	FL 410
		Specific Range	*0.417*	0.648	0.627	0.447	0.595	0.779
	High Speed	TAS	*220*	214	270	234	310	400
		Fuel Flow	*610*	375	612	605	750	792
		Altitude	*FL 200*	FL 100	FL 200	FL 100	FL 260	FL 310
		Specific Range	*0.361*	0.571	0.441	0.387	0.413	0.505
NBAA IFR Ranges (100-nm alternate)	**Max Payload** (w/available fuel)	Nautical Miles	*NP*	543	275	427	330	1,070
		Average Speed	*NP*	180	226	179	267	315
		Trip Fuel	*NP*	781	648	1,009	864	1,715
		Specific Range/Altitude	*NP/NP*	0.695/FL 100	0.424/FL 270	0.423/FL 100	0.382/FL 330	0.624/FL 390
	Max Fuel (w/available payload)	Nautical Miles	*1,046*	837	1,040	1,188	1,412	1,450
		Average Speed	*217*	179	252	180	292	311
		Trip Fuel	*3,008*	1,220	2,069	2,767	2,958	2,167
		Specific Range/Altitude	*0.348/FL 100*	0.686/FL 100	0.503/FL 270	0.429/FL 100	0.477/FL 330	0.669/FL 410
	Full Fuel (w/4 passengers)	Nautical Miles	*1,046*	837	1,005	1,201	1,074	1,510
		Average Speed	*217*	179	251	180	288	317
		Trip Fuel	*3,008*	1,220	2,006	2,770	2,293	2,167
		Specific Range/Altitude	*0.348/FL 100*	0.686/FL 100	0.501/FL 270	0.434/FL 100	0.468/FL 330	0.697/FL 410
	Ferry	Nautical Miles	*1,051*	837	1,060	1,228	1,430	1,530
		Average Speed	*218*	179	255	176	293	318
		Trip Fuel	*3,008*	1,220	2,077	2,787	2,960	2,167
		Specific Range/Altitude	*0.349/FL 100*	0.686/FL 100	0.510/FL 260	0.441/FL 100	0.483/FL 330	0.706/FL 410
Missions (4 passengers)	**300 nm**	Runway	*3,163*	1,247	3,163	3,815	3,495	2,350
		Flight Time	*1+26*	1+35	1+14	1+21	1+03	0+53
		Fuel Used	*943*	419	747	807	868	688
		Specific Range/Altitude	*0.318/FL 100*	0.716/FL 100	0.402/FL 210	0.372/FL 100	0.346/FL 250	0.436/FL 310
	600 nm	Runway	*1,289*	1,558	3,362	4,075	3,578	2,550
		Flight Time	*2+22*	3+18	2+22	2+39	2+03	1+44
		Fuel Used	*1,773*	866	1,351	1,609	1,493	1,144
		Specific Range/Altitude	*0.338/FL 100*	0.693/FL 100	0.444/FL 230	0.373/FL 100	0.402/FL 290	0.524/FL 350
	1,000 nm	Runway	*1,565*	NP	3,660	NP	3,667	2,700
		Flight Time	*4+36*	NP	3+56	NP	3+28	3+02
		Fuel Used	*2,881*	NP	1,996	NP	2,146	1,603
		Specific Range/Altitude	*0.347/FL 100*	NP/NP	0.501/FL 270	NP/NP	0.466/FL 330	0.624/FL 390
Remarks		Suggested Base Price	*NA*	$2,300,000	$3,813,500	NA	$5,995,000	$7,195,000
		Certification Basis	*EASA/FAR 23 pndg. All data prelim.; CMC SmartDeck.*	FAR 23 1986 Data *BCA* est.: G950; STEC 2100.	CAR 3, 1959/07 Pro Line 21; STC SA10747SC wt. inc.	SFAR 41C, 1986	FAR 23, 1973/80/08/11	FAR 23 1990 Pro Line 21; Iridium satcom; RVSM app'd.

MULTIENGINE TURBOPROPS >12,500-LB. MTOW

Manufacturer			Hawker Beechcraft	Hawker Beechcraft
Model			King Air 350i B300	King Air 350iER B300ER
BCA Equipped Price			$7,312,700	$8,353,100
Characteristics		Seating	1+9/11	1+9/11
		Wing Loading	48.4	53.2
		Power Loading	7.14	7.86
		Noise (dBA)	72.1	81.5
External Dimensions (ft.)		Length	46.7	46.7
		Height	14.3	14.3
		Span	57.9	57.9
Internal Dimensions (ft.)		**Length:** OA/Net	19.5/19.5	19.5/19.5
		Height	4.8	4.8
		Width: Max/Floor	4.5/4.1	4.5/4.1
Power		Engines	2 P&WC PT6A-60A	2 P&WC PT6A-60A
		Output (shp each)/Flat Rating	1,050/ISA+10C	1,050/ISA+10C
		Inspection Interval	3,600t	3,600t
Weights (lb.)		Max Ramp	15,100	16,600
		Max Takeoff	15,000	16,500
		Max Landing	15,000	15,675
		Zero Fuel	12,500c	13,000c
		BOW	10,070	10,385
		Max Payload	2,430	2,615
		Useful Load	5,030	6,215
		Executive Payload	1,800	1,800
		Max Fuel	3,611	5,192
		Available Payload w/Max Fuel	1,419	1,023
		Available Fuel w/Max Payload	2,600	3,600
		Available Fuel w/Executive Payload	3,230	4,415
Limits		M_{MO}	0.58	0.58
		Trans. Alt. FL	FL 210	FL 240
		V_{MO}	263	245
		V_A	182	182
		PSI	6.6	6.6
Airport Performance		TO (SL elev./ISA temp.)	3,300	4,473
		TOFL (5,000' elev.@25C)	5,376	7,588
		Hot/High WAT Limit	14,196	15,830
		NBAA IFR Range	1,551	2,080
		V_2	109	111
		V_{REF}	100	104
		Landing Distance	2,390	2,728
Climb		Time to Climb (min.)/Altitude	15/FL 250	18/FL 250
		*FAR 25 Initial Engine-Out Rate (fpm)	552	337
		FAR 25 Initial Engine-Out Gradient (ft./nm)	304	182
Ceilings (ft.)		Certificated	35,000	35,000
		All-Engine Service	35,000	35,000
		Engine-Out Service	21,500	17,100
		Sea-Level Cabin	15,293	15,293
Cruise	Long Range	TAS	235	238
		Fuel Flow	362	402
		Altitude	FL 330	FL 330
		Specific Range	0.649	0.592
	High Speed	TAS	312	303
		Fuel Flow	773	764
		Altitude	FL 240	FL 240
		Specific Range	0.404	0.397
NBAA IFR Ranges (100-nm alternate)	Max Payload (w/available fuel)	Nautical Miles	899	1,336
		Average Speed	274	261
		Trip Fuel	1,897	2,886
		Specific Range/Altitude	0.474/FL 350	0.463/FL 350
	Max Fuel (w/available payload)	Nautical Miles	1,489	2,239
		Average Speed	280	268
		Trip Fuel	2,951	4,528
		Specific Range/Altitude	0.505/FL 350	0.494/FL 350
	Full Fuel (w/4 passengers)	Nautical Miles	1,532	2,273
		Average Speed	284	270
		Trip Fuel	2,956	4,530
		Specific Range/Altitude	0.518/FL 350	0.502/FL 350
	Ferry	Nautical Miles	1,560	2,340
		Average Speed	288	274
		Trip Fuel	2,962	4,539
		Specific Range/Altitude	0.527/FL 350	0.516/FL 350
Missions (4 passengers)	300 nm	Runway	2,608	3,463
		Flight Time	1+02	1+05
		Fuel Used	883	908
		Specific Range/Altitude	0.340/FL 250	0.330/FL 250
	600 nm	Runway	2,724	3,597
		Flight Time	2+02	2+07
		Fuel Used	1,472	1,511
		Specific Range/Altitude	0.408/FL 290	0.397/FL 290
	1,000 nm	Runway	2,851	3,745
		Flight Time	3+27	3+36
		Fuel Used	2,106	2,176
		Specific Range/Altitude	0.475/FL 330	0.460/FL 330
		Suggested Base Price	$7,275,000	$8,315,400
Remarks		Certification Basis	FAR 23, 1989 Commuter cat.; Pro Line 21; new interior w/Rockwell Collins Venue; RVSM app'd.	FAR 23, 1989/07 Commuter cat.; Pro Line 21; new interior w/Rockwell Collins Venue; RVSM app'd.

JETS LESS THAN 10,000-LB. MTOW

Manufacturer			Cessna
Model			Citation Mustang CE-510
BCA Equipped Price			$3,202,000
Characteristics		Seating	1+5/5
		Wing Loading	41.2
		Power Loading	2.96
		Noise (EPNdB): TO/Sideline/APR	73.9/85.0/86.0
External Dimensions (ft.)		Length	40.6
		Height	13.4
		Span	43.2
Internal Dimensions (ft.)		**Length:** OA/Net	9.8/9.8
		Height	4.5
		Width: Max/Floor	4.6/3.1
Baggage		**Internal:** Cu. ft./lb.	6/98
		External: Cu. ft./lb.	57/620
Power		Engine(s)	2 P&WC PW615F
		Output (lb. each)/Flat Rating	1,460/ISA+10C
		Inspection Interval	3,500t
Weights (lb.)		Max Ramp	8,730
		Max Takeoff	8,645
		Max Landing	8,000
		Zero Fuel	6,750c
		BOW	5,585
		Max Payload	1,165
		Useful Load	3,145
		Executive Payload	1,000
		Max Fuel	2,580
		Available Payload w/Max Fuel	565
		Available Fuel w/Max Payload	1,980
		Available Fuel w/Executive Payload	2,145
Limits		M_{MO}	0.630
		Trans. Alt. FL/V_{MO}	FL 271/250
		PSI	8.3
Airport Performance		TOFL (SL elev./ISA temp.)	3,110
		TOFL (5,000' elev.@25C)	6,600
		Hot/High Weight Limit	8,645
		NBAA IFR Range	995
		V2@SL ISA, MTOW	97
		V_{REF} w/4 Pax, NBAA IFR Res.	88
		Landing Distance w/4 Pax, NBAA IFR Res.	2,136
Climb		Time to Climb/Altitude	20/FL 370
		FAR 25 Engine-Out Rate (fpm)	432
		FAR 25 Engine-Out Gradient (ft./nm)	267
Ceilings (ft.)		Certificated	41,000
		All-Engine Service	41,000
		Engine-Out Service	26,900
		Sea-Level Cabin	21,280
Cruise	Long Range	TAS	319
		Fuel Flow	498
		Altitude	FL 390
		Specific Range	0.641
	High Speed	TAS	339
		Fuel Flow	609
		Altitude	FL 350
		Specific Range	0.557
NBAA IFR Ranges (100-nm alternate)	Max Payload (w/available fuel)	Nautical Miles	716
		Average Speed	294
		Trip Fuel	1,300
		Specific Range/Altitude	0.551/FL 410
	Max Fuel (w/available payload)	Nautical Miles	1,159
		Average Speed	305
		Trip Fuel	1,948
		Specific Range/Altitude	0.595/FL 410
	Four Passengers (w/available fuel)	Nautical Miles	974
		Average Speed	301
		Trip Fuel	1,679
		Specific Range/Altitude	0.580/FL 410
	Ferry	Nautical Miles	1,206
		Average Speed	315
		Trip Fuel	1,965
		Specific Range/Altitude	0.614/FL 410
Missions (4 passengers)	300 nm	Runway	2,493
		Flight Time	1+00
		Fuel Used	670
		Specific Range/Altitude	0.448/FL 370
	600 nm	Runway	2,687
		Flight Time	1+56
		Fuel Used	1,134
		Specific Range/Altitude	0.529/FL 390
	1,000 nm	Runway	3,109
		Flight Time	3+19
		Fuel Used	1,717
		Specific Range/Altitude	0.582/FL 410
Remarks		Certification Basis	FAR 23, 2006 1,000-nm mission flown with 763-lb. payload.

JETS LESS THAN 20,000-LB. MTOW

Manufacturer			Embraer	Cessna	HACI	Cessna	Hawker Beechcraft
Model			Phenom 100 EMB-500	Citation M2 CE-525	HondaJet	Citation CJ2+ CE-525A	Premier IA Model 390
BCA Equipped Price			$4,080,000	$4,395,000	$4,500,000	$7,044,000	$7,105,800
Characteristics		Seating	1+5/7	1+7/7	1+5/6	1+8/9	1+6/7
		Wing Loading	51.9	44.6	NA	47.4	50.6
		Power Loading	3.09	2.72	NA	2.51	2.72
		Noise (EPNdB): TO/Sideline/APR	70.4/81.4/86.1	NA/NA/NA	NA/NA/NA	75.5/86.1/89.7	78.3/87.9/92.0
External Dimensions (ft.)		Length	42.1	42.6	42.6	47.7	46.0
		Height	14.3	13.8	15.0	14.0	15.3
		Span	40.4	46.9	39.8	49.8	44.5
Internal Dimensions (ft.)		**Length:** OA/Net	11.0/11.0	11.0/11.0	13.0/10.5	13.6/13.6	13.5/11.2
		Height	4.9	4.8	4.8	4.8	5.4
		Width: Max/Floor	5.1/3.6	4.8/3.1	5.0/NA	4.8/3.1	5.5/3.7
Baggage		**Internal:** Cu. ft./lb.	11/99	0/0	66.0/NA	0/0	23/210
		External: Cu. ft./lb.	60/418	45/725	NA/NA	65/1,000	54/550
Power		Engines	2 P&WC PW617F-E	2 Wms Intl FJ44-1AP-21	2 GE Honda HF-120	2 Wms Intl FJ44-3A-24	2 Wms Intl FJ44-2A
		Output (lb. each)/Flat Rating	1,695/ISA+10C	1,965/ISA+7C	2,050/NA	2,490/ISA+7C	2,300/ISA+13C
		Inspection Interval	3,500t	4,000t	NA	4,000t	3,500t
Weights (lb.)		Max Ramp	10,516	10,800	9,300	12,625	12,590
		Max Takeoff	10,472	10,700	9,300	12,500	12,500
		Max Landing	9,766	9,900	NA	11,525	11,600
		Zero Fuel	8,444c	8,400c	NA	9,700c	10,000c
		BOW	7,132	6,991	NA	7,980	8,600
		Max Payload	1,312	1,409	NA	1,720	1,400
		Useful Load	3,384	3,809	NA	4,645	3,990
		Executive Payload	1,000	1,400	NA	1,600	1,200
		Max Fuel	2,804	3,309	NA	3,930	3,670
		Available Payload w/Max Fuel	580	500	NA	715	320
		Available Fuel w/Max Payload	2,072	2,400	NA	2,925	2,590
		Available Fuel w/Executive Payload	2,384	2,409	NA	3,045	2,790
Limits		M_{MO}	0.700	0.710	0.720	0.737	0.800
		Trans. Alt. FL/V_{MO}	FL 280/275	FL 305/263	FL 300/NA	FL 291/278	FL 280/320
		PSI	8.3	8.5	8.7	8.9	8.4
Airport Performance		TOFL (SL elev./ISA temp.)	3,040	3,250	4,000	3,360	3,792
		TOFL (5,000' elev.@25C)	6,384	5,720	NA	5,180	6,888
		Hot/High Weight Limit	10,472	10,700	NA	12,500	12,500
		NBAA IFR Range	1,065	1,145	NA	1,561	1,125
		V_2@SL ISA, MTOW	97	NA	NA	116	118
		V_{REF} w/4 Pax, NBAA IFR Res.	94	NA	NA	102	112
		Landing Distance w/4 Pax, NBAA IFR Res.	2,473	2,354	3,000	2,650	2,997
Climb		Time to Climb/Altitude	23/FL 370	18/FL 370	NA	15/FL 370	17/FL 370
		FAR 25 Engine-Out Rate (fpm)	549	596	NA	611	586
		FAR 25 Engine-Out Gradient (ft./nm)	310	NA	NA	316	298
Ceilings (ft.)		Certificated	41,000	41,000	43,000	45,000	41,000
		All-Engine Service	41,000	41,000	43,000	45,000	41,000
		Engine-Out Service	25,582	21,200	NA	23,800	28,000
		Sea-Level Cabin	21,280	22,027	NA	23,586	21,400
Cruise	Long Range	TAS	333	324	NA	357	369
		Fuel Flow	524	535	NA	588	662
		Altitude	FL 410	FL 410	NA	FL 450	FL 410
		Specific Range	0.635	0.606	NA	0.607	0.557
	High Speed	TAS	390	398	NA	413	451
		Fuel Flow	852	943	NA	1,096	1,203
		Altitude	FL 330	FL 350	NA	FL 350	FL 330
		Specific Range	0.458	0.422	NA	0.377	0.375
NBAA IFR Ranges (FAR Part 23, 100-nm alternate; FAR Part 25, 200-nm alternate)	Max Payload (w/available fuel)	Nautical Miles	710	768	NA	993	787
		Average Speed	320	357	NA	368	390
		Trip Fuel	1,455	1,672	NA	2,071	1,824
		Specific Range/Altitude	0.488/FL 410	0.459/FL 410	NA/NA	0.479/FL 450	0.431/FL 410
	Max Fuel (w/available payload)	Nautical Miles	1,195	1,313	1,180	1,610	1,360
		Average Speed	325	370	NA	379	408
		Trip Fuel	2,206	2,652	NA	3,152	2,934
		Specific Range/Altitude	0.542/FL 410	0.495/FL 410	NA/FL 410	0.511/FL 450	0.464/FL 410
	Four Passengers (w/available fuel)	Nautical Miles	1,045	1,125	NA	1,538	1,105
		Average Speed	324	366	NA	378	402
		Trip Fuel	1,978	2,316	NA	3,027	2,441
		Specific Range/Altitude	0.528/FL 410	0.486/FL 410	NA	0.508/FL 450	0.453/FL 410
	Ferry	Nautical Miles	1,244	1,342	NA	1,649	1,370
		Average Speed	325	374	NA	385	409
		Trip Fuel	2,224	2,680	NA	3,179	2,942
		Specific Range/Altitude	0.559/FL 410	0.501/FL 410	NA/NA	0.519/FL 450	0.466/FL 410
Missions (4 passengers)	300 nm	Runway	2,715	2,667	NA	2,464	2,961
		Flight Time	0+56	0+52	NA	0+49	0+48
		Fuel Used	738	824	NA	898	898
		Specific Range/Altitude	0.407/FL 390	0.364/FL 370	NA/NA	0.334/FL 370	0.334/FL 370
	600 nm	Runway	2,752	2,781	NA	2,672	3,229
		Flight Time	1+50	1+39	NA	1+35	1+33
		Fuel Used	1,210	1,400	NA	1,459	1,433
		Specific Range/Altitude	0.496/FL 410	0.429/FL 390	NA	0.411/FL 410	0.419/FL 410
	1,000 nm	Runway	3,045	3,107	NA	297	3,672
		Flight Time	3+04	2+44	NA	2+36	2+30
		Fuel Used	1,869	2,078	NA	2,160	2,231
		Specific Range/Altitude	0.535/FL 410	0.481/FL 410	NA	0.463/FL 430	0.448/FL 410
Remarks		Certification Basis	FAR 23, 2008	FAR 23 pending All data preliminary.	FAR 23 pending All date prelilminary	FAR 23, 2000/05	FAR 23 A 52, 2001

JETS LESS THAN 20,000-LB. MTOW

Manufacturer			Syberjet	Cessna	Embraer	Cessna
Model			SJ30-2 SJ30-2	Citation CJ3 CE-525B	Phenom 300 EMB-505	Citation CJ4 CE-525C
BCA Equipped Price			$7,250,000	$8,174,000	$8,755,000	$8,932,000
Characteristics		Seating	1+5/6	2+7/8	1+7/10	2+8/9
		Wing Loading	73.2	47.2	58.6	51.8
		Power Loading	3.03	2.46	2.67	2.36
		Noise (EPNdB): TO/Sideline/APR	78.5/86.2/91.8	74.0/88.7/88.6	69.9/88.8/88.5	75.6/92.8/89.5
External Dimensions (ft.)		Length	46.8	51.2	51.2	53.3
		Height	14.2	15.2	16.7	15.3
		Span	42.3	53.3	52.2	50.8
Internal Dimensions (ft.)		**Length:** OA/Net	12.5/12.5	15.7/15.7	17.2/17.2	17.3/17.3
		Height	4.4	4.8	4.9	4.8
		Width: Max/Floor	4.8/2.8	4.8/3.1	5.1/3.6	4.8/3.3
Baggage		**Internal:** Cu. ft./lb.	6/100	0/0	11/77	7/40
		External: Cu. ft./lb.	53/500	65/1,000	74/573	71/1,000
Power		Engines	2 Wms Intl FJ44-2A	2 Wms Intl FJ44-3A	2 P&WC PW535E	2 Wms Intl FJ44-4A
		Output (lb. each)/Flat Rating	2,300/ISA+8C	2,820/ISA+11C	3,360/ISA+15C	3,621/ISA+11C
		Inspection Interval	3,500t	4,000t	5,000t	5,000t
Weights (lb.)		Max Ramp	14,050	14,070	18,078	17,230
		Max Takeoff	13,950	13,870	17,968	17,110
		Max Landing	12,725	12,750	16,865	15,660
		Zero Fuel	10,500c	10,510c	13,999	12,500c
		BOW	8,917	8,760	11,583	10,350
		Max Payload	1,583	1,750	2,416	2,150
		Useful Load	5,133	5,310	6,495	6,880
		Executive Payload	1,000	1,400	1,400	1,600
		Max Fuel	4,850	4,710	5,353	5,828
		Available Payload w/Max Fuel	283	600	1,142	1,052
		Available Fuel w/Max Payload	3,550	3,560	4,079	4,730
		Available Fuel w/Executive Payload	4,133	3,910	5,095	5,280
Limits		M_{MO}	0.830	0.737	0.780	0.770
		Trans. Alt. FL/V_{MO}	FL 295/320	FL 293/278	FL 263/320	FL 279/305
		PSI	12.0	8.9	9.4	9.0
Airport Performance		TOFL (SL elev./ISA temp.)	3,939	3,180	3,138	3,190
		TOFL (5,000' elev.@25C)	8,784	4,750	5,144	5,130
		Hot/High Weight Limit	13,125	13,870	17,968	16,858
		NBAA IFR Range	1,915	1,726	2,019	1,946
		V_2@SL ISA, MTOW	112	114	112	117
		V_{REF} w/4 Pax, NBAA IFR Res.	104	99	104	98
		Landing Distance w/4 Pax, NBAA IFR Res.	2,657	2,422	2,220	2,267
Climb		Time to Climb/Altitude	16/FL 370	15/FL 370	14/FL 370	14/FL 370
		FAR 25 Engine-Out Rate (fpm)	312	808	916	839
		FAR 25 Engine-Out Gradient (ft./nm)	167	425	462	430
Ceilings (ft.)		Certificated	49,000	45,000	45,000	45,000
		All-Engine Service	44,000	45,000	45,000	45,000
		Engine-Out Service	25,800	26,250	30,137	28,200
		Sea-Level Cabin	41,000	23,586	25,560	23,984
Cruise	Long Range	TAS	436	351	383	376
		Fuel Flow	684	620	757	806
		Altitude	FL 450	FL 450	FL 450	FL 450
		Specific Range	0.637	0.566	0.506	0.467
	High Speed	TAS	475	415	444	442
		Fuel Flow	1,188	1,196	1,312	1,470
		Altitude	FL 360	FL 350	FL 350	FL 370
		Specific Range	0.400	0.347	0.338	0.301
NBAA IFR Ranges (FAR Part 23, 100-nm alternate; FAR Part 25, 200-nm alternate)	Max Payload (w/available fuel)	Nautical Miles	1,635	1,172	1,278	1,425
		Average Speed	402	368	381	407
		Trip Fuel	2,908	2,552	3,179	3,753
		Specific Range/Altitude	0.562/FL 470	0.459/FL 450	0.402/FL 450	0.380/FL 450
	Max Fuel (w/available payload)	Nautical Miles	2,598	1,869	1,954	1,913
		Average Speed	410	377	380	413
		Trip Fuel	4,241	3,850	4,487	4,904
		Specific Range/Altitude	0.613/FL 490	0.485/FL 450	0.435/FL 450	0.390/FL 450
	Four Passengers (w/available fuel)	Nautical Miles	2,205	1,702	1,996	1,923
		Average Speed	408	376	378	415
		Trip Fuel	3,713	3,539	4,516	4,916
		Specific Range/Altitude	0.594/FL 490	0.481/FL 450	0.442/FL 450	0.391/FL 450
	Ferry	Nautical Miles	2,667	1,890	2,082	1,952
		Average Speed	411	381	373	420
		Trip Fuel	4,246	3,865	4,542	4,950
		Specific Range/Altitude	0.628/FL 490	0.489/FL 450	0.458/FL 450	0.394/FL 450
Missions (4 passengers)	300 nm	Runway	2,822	2,604	2,607	2,431
		Flight Time	0+45	0+49	0+48	0+46
		Fuel Used	846	972	985	1,088
		Specific Range/Altitude	0.355/FL 410	0.309/FL 370	0.305/FL 450	0.276/FL 390
	600 nm	Runway	3,025	2,616	2,720	2,446
		Flight Time	1+26	1+35	1+30	1+27
		Fuel Used	1,313	1,576	1,616	1,866
		Specific Range/Altitude	0.457/FL 450	0.381/FL 410	0.371/FL 450	0.322/FL 410
	1,000 nm	Runway	3,336	2,788	2,808	2,508
		Flight Time	2+21	2+37	2+26	2+24
		Fuel Used	1,980	2,323	2,466	2,826
		Specific Range/Altitude	0.505/FL 450	0.430/FL 430	0.406/FL 450	0.354/FL 430
Remarks		Certification Basis	FAR 23 Commuter category	FAR 23 Commuter category, 2004	FAR 23 Commuter category, 2009	FAR 23 Commuter category, 2010

JETS 20,000-LB. MTOW OR GREATER

Manufacturer			Bombardier	Cessna	Bombardier	Bombardier	Gulfstream Aero.	Hawker Beechcraft
Model			Learjet 40XR Model 45 (Learjet 40)	Citation XLS+ CE-560XL	Learjet 45XR Model 45 (Learjet 45)	Learjet 60XR Model 60	G150 G150	Hawker 900XP Hawker 900XP
BCA Equipped Price			$10,838,000	$12,714,000	$13,209,000	$13,716,000	$15,550,000	$16,067,700
Characteristics		Seating	2+6/7	2+9/12	2+8/9	2+7/9	2+7/9	2+9/9
		Wing Loading	67.4	54.6	69.0	88.8	82.3	74.9
		Power Loading	3.00	2.45	3.07	2.55	2.95	3.00
		Noise (EPNdB): TO/Sideline/APR	75.5/85.1/93.4	72.2/86.8/92.8	75.5/85.1/93.4	70.8/83.1/87.7	80.7/91.2/91.9	76.7/86.6/94.9
External Dimensions (ft.)		Length	55.6	52.5	57.6	58.7	56.8	51.1
		Height	14.1	17.2	14.1	14.6	19.1	18.1
		Span	47.8	56.3	47.8	43.8	55.6	54.3
Internal Dimensions (ft.)		**Length:** OA/Net	17.7/17.7	18.5/18.5	19.8/19.8	17.7/15.8	17.7/17.7	21.3/21.3
		Height	4.9	5.7	4.9	5.7	5.8	5.7
		Width: Max/Floor	5.1/3.2	5.5/3.9	5.1/3.2	5.9/3.8	5.8/4.7	5.9/4.4
Baggage		**Internal:** Cu. ft./lb.	15/170	10/100	15/170	24/350	25/NA	50/395
		External: Cu. ft./lb.	50/500	80/700	50/500	24/300	55/1,100	—/—
Power		Engines	2 Hon TFE731-20BR	2 P&WC PW545C	2 Hon TFE731-20BR	2 P&WC PW305A	2 Hon TFE731-40AR-200G	2 Hon TFE731-50R
		Output (lb. each)/Flat Rating	3,500/ISA+25C	4,119/ISA+10C	3,500/ISA+25C	4,600/ISA+17C	4,420/ISA+13C	4,660/ISA+16C
		Inspection Interval	6,000c	5,000t	6,000c	6,000t	6,000c	6,000c
Weights (lb.)		Max Ramp	21,250	20,400	21,750	23,750	26,250	28,120
		Max Takeoff	21,000	20,200	21,500	23,500	26,100	28,000
		Max Landing	19,200	18,700	19,200	19,500	21,700	23,350
		Zero Fuel	16,000c	15,100c	16,000c	17,000c	17,500c	18,450c
		BOW	13,949	12,800	14,125	14,896	15,200	16,500
		Max Payload	2,051	2,300	1,875	2,104	2,300	1,950
		Useful Load	7,301	7,600	7,625	8,854	11,050	11,620
		Executive Payload	1,200	1,800	1,600	1,400	1,400	1,800
		Max Fuel	6,062	6,740	6,062	7,910	10,300	10,000
		Available Payload w/Max Fuel	1,239	860	1,563	944	750	1,620
		Available Fuel w/Max Payload	5,250	5,300	5,750	6,750	8,750	9,670
		Available Fuel w/Executive Payload	6,062	5,800	6,025	7,454	9,650	10,000
Limits		M_{MO}	0.810	0.750	0.810	0.810	0.850	0.800
		Trans. Alt. FL/V_{MO}	FL 270/330	FL 265/305	FL 270/330	FL 270/330	FL 300/330	FL 290/310
		PSI	9.4	9.3	9.4	9.4	8.8	8.6
Airport Performance		TOFL (SL elev./ISA temp.)	4,680	3,560	5,040	5,450	5,012	4,965
		TOFL (5,000' elev.@25C)	5,690	5,430	5,811	8,520	8,120	6,623
		Hot/High Weight Limit	20,681	20,200	20,857	23,371p	26,100	27,219
		NBAA IFR Range	1,888	1,764	1,866	2,264	2,988	2,790
		V2@SL ISA, MTOW	123	118	130	147	131	140
		V_{REF} w/4 Pax, NBAA IFR Res.	113	106	114	131	115	113
		Landing Distance w/4 Pax, NBAA IFR Res.	2,355	2,732	2,371	3,049	2,442	2,280
Climb		Time to Climb/Altitude	15/FL 370	15/FL 370	15/FL 370	13/FL 370	17/FL 370	17/FL 370
		FAR 25 Engine-Out Rate (fpm)	394	765	589	718	438	428
		FAR 25 Engine-Out Gradient (ft./nm)	192	389	272	293	201	194
Ceilings (ft.)		Certificated	51,000	45,000	51,000	51,000	45,000	41,000
		All-Engine Service	45,200	45,000	44,700	42,400	42,400	41,000
		Engine-Out Service	28,400	28,600	27,900	24,300	26,400	21,800
		Sea-Level Cabin	25,700	25,230	25,700	25,700	23,000	22,200
Cruise	Long Range	TAS	436	353	437	423	430	402
		Fuel Flow	986	861	997	1,127	1,184	1,123
		Altitude	FL 470	FL 450	FL 470	FL 430	FL 430	FL 410
		Specific Range	0.442	0.410	0.438	0.375	0.363	0.358
	High Speed	TAS	449	431	448	446	475	446
		Fuel Flow	1,073	1,235	1,071	1,294	1,938	1,745
		Altitude	FL 470	FL 410	FL 470	FL 430	FL 350	FL 370
		Specific Range	0.418	0.349	0.418	0.345	0.245	0.256
NBAA IFR Ranges (200-nm alternate)	Max Payload (w/available fuel)	Nautical Miles	1,367	1,150	1,557	1,745	2,335	2,600
		Average Speed	421	385	423	414	415	393
		Trip Fuel	3,755	3,663	4,255	5,260	7,265	8,114
		Specific Range/Altitude	0.364/FL 450	0.314/FL 450	0.366/FL 450	0.332/FL 410	0.321/FL 450	0.320/FL 410
	Max Fuel (w/available payload)	Nautical Miles	1,762	1,745	1,706	2,244	3,011	2,729
		Average Speed	421	396	423	416	418	394
		Trip Fuel	4,614	5,236	4,585	6,489	8,903	8,498
		Specific Range/Altitude	0.382/FL 470	0.333/FL 450	0.372/FL 470	0.346/FL 410	0.338/FL 450	0.321/FL 410
	Four Passengers (w/available fuel)	Nautical Miles	1,862	1,743	1,840	2,294	2,988	2,818
		Average Speed	423	396	425	415	418	395
		Trip Fuel	4,761	5,231	4,750	6,598	8,850	8,535
		Specific Range/Altitude	0.391/FL 470	0.333/FL 450	0.387/FL 450	0.348/FL 410	0.338/FL 450	0.330/FL 410
	Ferry	Nautical Miles	1,964	1,788	1,941	2,400	3,122	2,897
		Average Speed	425	403	425	413	419	395
		Trip Fuel	4,809	5,271	4,797	6,647	8,945	8,571
		Specific Range/Altitude	0.408/FL 490	0.339/FL 450	0.405/FL 490	0.361/FL 410	0.349/FL 450	0.338/FL 410
Missions (4 passengers)	300 nm	Runway	3,429	2,736	3,478	3,352	3,623	3,702
		Flight Time	0+43	0+46	0+44	0+43	0+50	0+47
		Fuel Used	1,250	1,244	1,255	1,263	1,230	1,288
		Specific Range/Altitude	0.240/FL 370	0.241/FL 390	0.239/FL 370	0.238/FL 370	0.244/FL 450	0.233/FL 410
	600 nm	Runway	3,569	2,743	3,598	3,583	3,783	3,780
		Flight Time	1+24	1+29	1+24	1+24	1+32	1+29
		Fuel Used	1,925	2,091	1,934	2,010	1,974	2,280
		Specific Range/Altitude	0.312/FL 450	0.287/FL 410	0.310/FL 450	0.299/FL 410	0.304/FL 450	0.263/FL 410
	1,000 nm	Runway	3,734	3,010	3,794	3,998	3,971	3,879
		Flight Time	2+16	2+26	2+17	2+17	2+28	2+23
		Fuel Used	3,003	3,208	3,009	3,213	2,998	3,607
		Specific Range/Altitude	0.333/FL 450	0.312/FL 430	0.332/FL 450	0.311/FL 410	0.334/FL 450	0.277/FL 410
Remarks		Certification Basis	FAR 25 A 77; JAR 25 A 13, 1997/03	FAR 25, 2008	FAR 25 A 77; JAR 25 A 13	FAR 25, 1981/92/06	FAR 25 A 108, 2005	CAR 4b, 1964; FAR 25 A 46, 2007 Includes Pro Line 21 and 36-150 APU.

JETS 20,000-LB. MTOW OR GREATER

Manufacturer			Cessna	Cessna	*Cessna*	Hawker Beechcraft	*Gulfstream Aero.*	Bombardier
Model			Citation Sovereign CE-680	Citation X CE-750	*Citation Ten CE-750*	Hawker 4000 Model 4000	*G280 G280*	Challenger 300 BD-100-1A10
BCA Equipped Price			$17,658,000	$21,695,000	*$22,550,000*	$22,908,500	*$24,000,000*	$24,326,000
Characteristics		Seating	2+9/12	2+9/12	*2+9/12*	2+8/10	*2+10/18*	2+8/10
		Wing Loading	58.7	68.5	*NA*	74.4	*80.0*	74.4
		Power Loading	2.63	2.67	*2.60*	2.86	*2.66*	2.85
		Noise (EPNdB): TO/Sideline/APR	71.8/87.5/91.3	73.2/83.8/90.3	*NA/NA/NA*	75.1/91.6/91.6	*NA/NA/NA*	75.5/87.6/89.6
External Dimensions (ft.)		Length	63.5	72.3	*73.6*	69.5	*66.8*	68.7
		Height	20.3	19.2	*19.2*	19.8	*21.3*	20.0
		Span	63.3	63.9	*69.2*	61.8	*63.0*	63.8
Internal Dimensions (ft.)		**Length:** OA/Net	25.3/25.3	23.9/23.9	*25.2/25.2*	29.5/25.0	*32.3/25.8*	28.6/16.5
		Height	5.7	5.7	*5.7*	6.0	*6.3*	6.1
		Width: Max/Floor	5.5/3.9	5.5/3.9	*5.5/3.9*	6.5/4.0	*7.2/5.7*	7.2/5.1
Baggage		**Internal:** Cu. ft./lb.	35/415	21/329	*22/NA*	109/990	*154/1,980*	106/750
		External: Cu. ft./lb.	100/1,000	82/775	*82/775*	—/—	*—/—*	—/—
Power		Engines	2 P&WC PW306C	2 RR AE3007C1	*2 RR AE3007C2*	2 P&WC PW308A	*2 Hon HTF7250G*	2 Hon HTF7000
		Output (lb. each)/Flat Rating	5,770/ISA+16C	6,764/ISA+15C	*7,034/ISA+15C*	6,900/ISA+22C	*7,445/ISA+17C*	6,826/ISA+15C
		Inspection Interval	6,000t	4,500t*	*4,500t**	6,000t	*OC*	OC
Weights (lb.)		Max Ramp	30,550	36,400	*36,900*	39,700	*39,750*	39,000
		Max Takeoff	30,300	36,100	*36,600*	39,500	*39,600*	38,850
		Max Landing	27,100	31,800	*32,000*	33,500	*32,700*	33,750
		Zero Fuel	20,800c	24,400c	*24,978c*	26,000c	*28,200c*	27,200c
		BOW	18,130	22,100	*22,464*	23,700	*24,150*	23,850*
		Max Payload	2,670	2,300	*2,514*	2,300	*4,050*	3,350
		Useful Load	12,420	14,300	*14,436*	16,000	*15,600*	15,150
		Executive Payload	1,800	1,800	*1,800*	1,600	*2,000*	1,600
		Max Fuel	11,223	12,931	*12,931*	14,600	*14,600*	14,045
		Available Payload w/Max Fuel	1,197	1,369	*1,505*	1,400	*1,000*	1,105
		Available Fuel w/Max Payload	9,750	12,000	*11,922*	13,700	*11,550*	11,800
		Available Fuel w/Executive Payload	10,620	12,500	*12,636*	14,400	*13,600*	13,550
Limits		M_{MO}	0.800	0.920	*NA*	0.840	*0.850*	0.830
		Trans. Alt. FL/V_{MO}	FL 298/305	FL 307/350	*NA/NA*	FL 200/350	*NA/NA*	FL 290/320
		PSI	9.3	9.3	*9.3*	9.6	*9.2*	8.8
Airport Performance		TOFL (SL elev./ISA temp.)	3,640	5,140	*5,140*	5,068	*4,750*	4,810
		TOFL (5,000' elev.@25C)	4,859	7,350	*7,300*	6,701	*NA*	6,860
		Hot/High Weight Limit	29,998	34,980p	*35,400p*	38,900	*NA*	38,545
		NBAA IFR Range	2,850	2,967	*3,164*	3,211	*3,600*	3,250
		V2@SL ISA, MTOW	115	137	*NA*	134	*NA*	130
		V_{REF} w/4 Pax, NBAA IFR Res.	95	112	*NA*	113	*NA*	113
		Landing Distance w/4 Pax, NBAA IFR Res.	2,202	2,730	*2,735*	2,475	*NA*	2,290
Climb		Time to Climb/Altitude	14/FL 370	17/FL 370	*14/FL 370*	14/FL 370	*NA/FL 370*	14/FL 370
		FAR 25 Engine-Out Rate (fpm)	629	486	*NA*	494	*NA*	474
		FAR 25 Engine-Out Gradient (ft./nm)	328	213	*NA*	221	*NA*	219
Ceilings (ft.)		Certificated	47,000	51,000	*51,000*	45,000	*45,000*	45,000
		All-Engine Service	43,000	43,000	*45,000*	43,100	*NA*	44,000
		Engine-Out Service	27,560	26,000	*26,000*	28,400	*NA*	27,800
		Sea-Level Cabin	25,230	25,230	*25,230*	25,240	*25,000*	23,338
Cruise	Long Range	TAS	397	470	*470*	447	*459*	459
		Fuel Flow	1,208	1,501	*1,427*	1,653	*NA*	1,584
		Altitude	FL 450	FL 470	*FL 470*	FL 450	*NA*	FL 450
		Specific Range	0.329	0.313	*0.329*	0.270	*NA*	0.290
	High Speed	TAS	445	514	*516*	470	*NA*	470
		Fuel Flow	1,737	2,234	*2,329*	1,852	*NA*	1,809
		Altitude	FL 390	FL 410	*FL 410*	FL 430	*NA*	FL 430
		Specific Range	0.256	0.230	*0.222*	0.254	*NA*	0.260
NBAA IFR Ranges (200-nm alternate)	Max Payload (w/available fuel)	Nautical Miles	2,276	2,683	*2,813*	2,855	*NA*	2,581
		Average Speed	403	463	*463*	437	*NA*	446
		Trip Fuel	7,938	9,942	*9,959*	11,731	*NA*	10,085
		Specific Range/Altitude	0.287/FL 450	0.270/FL 470	*0.282/FL 490*	0.243/FL 450	*NA/NA*	0.256/FL 450
	Max Fuel (w/available payload)	Nautical Miles	2,806	3,054	*3,229*	3,136	*NA*	3,226
		Average Speed	409	464	*464*	437	*NA*	449
		Trip Fuel	9,542	11,025	*11,122*	12,666	*NA*	12,194
		Specific Range/Altitude	0.294/FL 450	0.277/FL 490	*0.290/FL 490*	0.248/FL 450	*NA/NA*	0.265/FL 450
	Four Passengers (w/available fuel)	Nautical Miles	2,829	3,111	*3,295*	3,190	*3,600*	3,250
		Average Speed	411	464	*464*	437	*441*	448
		Trip Fuel	9,554	11,048	*11,151*	12,691	*12,740*	12,203
		Specific Range/Altitude	0.296/FL 450	0.282/FL 490	*0.295/FL 490*	0.251/FL 450	*0.283/FL 450*	0.266/FL 450
	Ferry	Nautical Miles	2,885	3,210	*3,380*	3,260	*NA*	3,310
		Average Speed	415	464	*465*	437	*NA*	448
		Trip Fuel	9,584	11,088	*11,188*	12,723	*NA*	12,228
		Specific Range/Altitude	0.301/FL 450	0.290/FL 490	*0.302/FL 490*	0.256/FL 450	*NA/NA*	0.271/FL 450
Missions (4 passengers)	300 nm	Runway	3,058	3,535	*NA*	2,712	*NA*	3,370
		Flight Time	0+45	0+41	*0+40*	0+47	*0+47*	0+47
		Fuel Used	1,488	1,797	*1,847*	1,730	*1,471*	1,578
		Specific Range/Altitude	0.202/FL 390	0.167/FL 370	*0.162/FL 370*	0.173/FL 450	*0.204/FL 370*	0.190/FL 450
	600 nm	Runway	3,068	3,580	*NA*	2,858	*NA*	3,420
		Flight Time	1+27	1+17	*1+15*	1+26	*1+27*	1+26
		Fuel Used	2,399	2,824	*2,915*	2,803	*2,333*	2,568
		Specific Range/Altitude	0.250/FL 430	0.212/FL 430	*0.206/FL 430*	0.214/FL 450	*0.257/FL 450*	0.234/FL 450
	1,000 nm	Runway	3,094	3,672	*NA*	3,060	*NA*	3,487
		Flight Time	2+22	2+03	*2+02*	2+18	*2+19*	2+18
		Fuel Used	4,438	4,588	*4,588*	4,281	*3,584*	3,910
		Specific Range/Altitude	0.267/FL 430	0.225/FL 430	*0.218/FL 430*	0.234/FL 450	*0.279/FL 450*	0.256/FL 450
Remarks		Certification Basis	FAR 25, 2004; JAR 25, 2005	FAR 25, 1996/02; JAR 25, 1999/02 *Engine flight hour inspection interval.	*FAR 25, 1996/02 All data preliminary; incl. Garmin G5000 *Engine flight hour inspection interval.*	FAR 25 A 105	*FAR 25 pending All data preliminary; price in 2013 dollars.*	FAR 25 A 98; JAR 25 Chg. 15 **BCA* Ops Survey BOW 24,120 lb.

JETS 20,000-LB. MTOW OR GREATER

Manufacturer			*Dassault*	Embraer	Bombardier	Bombardier	Embraer	Dassault
Model			*Falcon 2000S Falcon 2000EX*	Legacy 600 EMB-135BJ	Challenger 850 CL-600-2B19	Challenger 605 CL-600-2B16	Legacy 650 EMB-135BJ*	Falcon 2000LX Falcon 2000EX
BCA Equipped Price			*$25,000,000*	$26,000,000	$30,158,000	$30,160,000	$31,660,000	$32,300,000
Characteristics		Seating	*2+10/19*	2+13/14	2+14/15	3+10/19	2+13/14	2+8/19
		Wing Loading	*77.7*	90.0	101.8	107.1	97.2	81.2
		Power Loading	*2.93*	3.12	3.04	2.76	2.97	3.06
		Noise (EPNdB): TO/Sideline/APR	*NA/NA/NA*	79.7/86.8/91.3	78.8/82.4/92.1	81.2/86.2/90.3	78.0/86.9/91.7	76.1/91.6/90.8
External Dimensions (ft.)		Length	*66.3*	86.4	87.8	68.4	86.4	66.3
		Height	*23.2*	22.2	20.4	20.7	21.8	23.2
		Span	*70.2*	69.5	69.6	64.3	69.5	70.2
Internal Dimensions (ft.)		**Length:** OA/Net	*31.2/26.2*	49.8/42.4	48.4/27.0	28.3/25.5	49.8/42.4	31.2/26.2
		Height	*6.2*	6.0	6.1	6.1	6.0	6.2
		Width: Max/Floor	*7.7/6.3*	6.9/5.2	8.2/7.2	8.2/7.2	6.9/5.2	7.7/6.3
Baggage		**Internal:** Cu. ft./lb.	*131/1,600*	286/1,441	147/900	115/900	286/1,441	131/1,600
		External: Cu. ft./lb.	*—/—*	—/—	—/—	—/—	—/—	—/—
Power		Engines	*2 P&WC PW308C*	2 RR AE 3007 A1E	2 GE CF34-3B1	2 GE CF34-3B	2 RR AE 3007A2	2 P&WC PW308C
		Output (lb. each)/Flat Rating	*7,000/ISA+15C*	7,953/ISA+22C	8,729/ISA+8C	8,729/ISA+15C	9,020/ISA+15C	7,000/ISA+15C
		Inspection Interval	*7,000c*	OC	OC	OC	OC	7,000c
Weights (lb.)		Max Ramp	*41,200*	49,758	53,250	48,300	53,727	43,000
		Max Takeoff	*41,000*	49,604	53,000	48,200	53,572	42,800
		Max Landing	*39,300*	40,785	47,000	38,000	44,092	39,300
		Zero Fuel	*29,700c*	35,274c	44,000c	32,000c	36,156c	29,700c
		BOW	*24,750*	30,081	34,618	27,150	31,217	24,750
		Max Payload	*4,950*	5,193	9,382	4,850	4,939	4,950
		Useful Load	*16,450*	19,677	18,632	21,150	22,510	18,250
		Executive Payload	*2,000*	2,600	2,800	2,000	2,600	1,600
		Max Fuel	*14,600*	18,170	18,274	19,852	20,600	16,660
		Available Payload w/Max Fuel	*1,850*	1,507	358	1,298	1,910	1,590
		Available Fuel w/Max Payload	*11,500*	14,484	9,250	16,300	17,571	13,300
		Available Fuel w/Executive Payload	*14,450*	17,077	15,832	19,150	19,910	16,650
Limits		M_{MO}	*0.862*	0.800	0.850	0.850	0.800	0.862
		Trans. Alt. FL/V_{MO}	*FL 250/370*	FL 276/320	FL 254/335	FL 222/348	FL 276/320	FL 250/370
		PSI	*9.3*	8.4	8.6	8.8	8.4	9.3
Airport Performance		TOFL (SL elev./ISA temp.)	*4,450*	5,614	6,305	5,840	5,741	5,780
		TOFL (5,000' elev.@25C)	*6,115*	7,604	11,332	9,192	7,979	8,440
		Hot/High Weight Limit	*41,000*	49,604	53,000p	47,702	53,572	42,010
		NBAA IFR Range	*3,450*	3,453	2,986	4,060	3,953	4,095
		V2@SL ISA, MTOW	*124*	139	146	147	144	138
		V_{REF} w/4 Pax, NBAA IFR Res.	*107*	113	126	117	115	116
		Landing Distance w/4 Pax, NBAA IFR Res.	*2,585*	2,301	2,475	2,360	2,346	2,690
Climb		Time to Climb/Altitude	*14/FL 370*	21/FL 370	32/FL 370	21/FL 370	21/FL 370	16/FL 370
		FAR 25 Engine-Out Rate (fpm)	*490*	630	443	581	633	490
		FAR 25 Engine-Out Gradient (ft./nm)	*216*	272	182	237	259	216
Ceilings (ft.)		Certificated	*47,000*	41,000	41,000	41,000	41,000	47,000
		All-Engine Service	*43,700*	40,900	37,760	38,250	41,000	43,700
		Engine-Out Service	*26,150*	23,276	19,370	20,000	23,128	26,150
		Sea-Level Cabin	*25,300*	21,650	21,100	24,000	21,650	25,300
Cruise	Long Range	TAS	*437*	424	424	424	425	437
		Fuel Flow	*1,455*	1,874	2,061	1,828	1,901	1,485
		Altitude	*FL 450*	FL 410	FL 390	FL 410	FL 410	FL 450
		Specific Range	*0.300*	0.226	0.206	0.232	0.224	0.294
	High Speed	TAS	*482*	455	459	470	459	482
		Fuel Flow	*2,280*	2,545	2,393	2,443	2,570	2,315
		Altitude	*FL 390*	FL 370	FL 370	FL 370	FL 370	FL 390
		Specific Range	*0.211*	0.179	0.192	0.192	0.179	0.208
NBAA IFR Ranges (200-nm alternate)	Max Payload (w/available fuel)	Nautical Miles	*2,430*	2,442	1,116	3,010	3,056	2,905
		Average Speed	*427*	410	402	417	418	428
		Trip Fuel	*9,640*	12,336	6,759	14,255	15,392	11,475
		Specific Range/Altitude	*0.252/FL 450*	0.198/FL 410	0.165/FL 370	0.211/FL 410	0.199/FL 410	0.253/FL 450
	Max Fuel (w/available payload)	Nautical Miles	*3,415*	3,376	3,089	3,973	3,819	3,980
		Average Speed	*430*	407	416	419	417	430
		Trip Fuel	*12,740*	16,158	16,111	17,940	18,534	14,835
		Specific Range/Altitude	*0.268/FL 470*	0.209/FL 410	0.192/FL 390	0.221/FL 410	0.206/FL 410	0.268/FL 470
	Four Passengers (w/available fuel)	Nautical Miles	*3,510*	3,430	2,986	4,020	3,903	4,075
		Average Speed	*430*	406	416	419	414	431
		Trip Fuel	*12,740*	16,158	15,652	17,959	18,576	14,835
		Specific Range/Altitude	*0.276/FL 470*	0.212/FL 410	0.191/FL 390	0.224/FL 410	0.210/FL 410	0.275/FL 470
	Ferry	Nautical Miles	*3,585*	3,492	3,110	4,094	3,964	4,145
		Average Speed	*430*	404	416	419	413	431
		Trip Fuel	*12,740*	16,215	16,124	17,988	18,605	14,835
		Specific Range/Altitude	*0.281/FL 470*	0.215/FL 410	0.193/FL 390	0.228/FL 410	0.213/FL 410	0.279/FL 450
Missions (4 passengers)	300 nm	Runway	*NA*	3,707	3,858	3,387	3,356	3,405
		Flight Time	*0+48*	0+50	0+48	0+47	0+49	0+48
		Fuel Used	*1,615*	1,854	2,143	1,593	1,839	1,605
		Specific Range/Altitude	*0.186/FL 450*	0.162/FL 410	0.140/FL 390	0.188/FL 410	0.163/FL 410	0.187/FL 450
	600 nm	Runway	*NA*	3,741	4,109	3,418	3,520	3,405
		Flight Time	*1+28*	1+36	1+28	1+27	1+34	1+28
		Fuel Used	*2,560*	3,065	3,603	2,830	3,060	2,545
		Specific Range/Altitude	*0.234/FL 470*	0.196/FL 410	0.167/FL 390	0.212/FL 410	0.196/FL 410	0.236/FL 470
	1,000 nm	Runway	*NA*	3,787	4,474	3,476	3,576	3,405
		Flight Time	*2+21*	2+36	2+21	2+19	2+32	2+21
		Fuel Used	*3,860*	4,724	5,648	4,524	4,729	3,830
		Specific Range/Altitude	*0.259/FL 470*	0.212/FL 410	0.177/FL 390	0.221/FL 410	0.211/FL 410	0.261/FL 470
Remarks		Certification Basis	*FAR/EASA 25 pending; Includes EASy II and autobrakes; all data preliminary; 2013 delivery price.*	FAR 25, 2002	FAR/JAR 25, 1992 Optional ISA+15C engine flat-rating.	FAR 25, 1980/83/87/95/2006 Includes Pro Line 21; Class III EFB with IFIS.	FAR 25, 2011 *Factory modification DCA 145-000-00020/2008.	FAR/EASA 25, 2003/09 Includes EASy II and autobrakes; 2013 delivery price.

JETS 20,000-LB. MTOW OR GREATER

			Manufacturer	Gulfstream Aero.	Gulfstream Aero.	Dassault	Gulfstream Aero.	Bombardier	Dassault
			Model	G350 GIV-X	G450 GIV-X	Falcon 900LX Falcon 900EX	G500 GV-SP	Global 5000 BD-700-1A11	Falcon 7X Falcon 7X
			BCA Equipped Price	$34,905,000	$39,905,000	$42,400,000	$48,250,000	$48,620,000	$52,200,000
Characteristics			Seating	2+14/19	2+14/19	2+12/19	2+16/19	3+13/17	3+12/19
			Wing Loading	74.6	77.8	92.9	74.9	90.5	92.0
			Power Loading	2.56	2.69	3.27	2.77	3.14	3.64
			Noise (EPNdB): TO/Sideline/APR	74.1/89.7/92.3	76.2/89.5/92.3	78.2/90.3/92.1	77.6/90.5/90.8	81.3/88.9/89.7	83.7/90.3/92.6
External Dimensions (ft.)			Length	89.3	89.3	66.3	96.4	96.8	76.1
			Height	25.2	25.2	24.8	25.8	25.5	25.7
			Span	77.8	77.8	70.2	93.5	94.0	86.0
Internal Dimensions (ft.)			**Length:** OA/Net	45.1/37.0	45.1/37.0	39.0/33.2	50.1/42.6	45.7/40.5	46.5/39.1
			Height	6.2	6.2	6.2	6.2	6.3	6.2
			Width: Max/Floor	7.3/5.5	7.3/5.5	7.7/6.3	7.3/5.5	8.2/6.9	7.7/6.3
Baggage			**Internal:** Cu. ft./lb.	169/2,000	169/2,000	127/2,866	226/2,500	195/1,000	140/2,004
			External: Cu. ft./lb.	—/—	—/—	—/—	—/—	—/—	—/—
Power			Engines	2 RR Tay Mk 611-8C	2 RR Tay Mk 611-8C	3 Hon TFE731-60	2 RR BR700-710C4-11	2 RR BR700-710A2-20	3 P&WC PW307A
			Output (lb. each)/Flat Rating	13,850/ISA+15C	13,850/ISA+15C	5,000/ISA+17C	15,385/ISA+15C	14,750/ISA+20C	6,402/ISA+17C
			Inspection Interval	12,000 or OCt	12,000 or OCt	6,000c	8,000 or OCt	OC	7,200c
Weights (lb.)			Max Ramp	71,300	75,000	49,200	85,500	92,750	70,200
			Max Takeoff	70,900	74,600	49,000	85,100	92,500	70,000
			Max Landing	66,000	66,000	44,500	75,300	78,600	62,400
			Zero Fuel	49,000c	49,000c	30,864c	54,500c	58,000c	41,000c
			BOW	42,900	43,200	26,750	48,000	50,861	36,600
			Max Payload	6,100	5,800	4,114	6,500	7,139	4,400
			Useful Load	28,400	31,800	22,450	37,500	41,889	33,600
			Executive Payload	2,800	2,800	2,400	3,200	2,600	2,400
			Max Fuel	25,807	29,281	20,905	34,939	38,959	31,940
			Available Payload w/Max Fuel	2,593	2,519	1,545	2,561	2,930	1,660
			Available Fuel w/Max Payload	22,300	26,000	18,336	31,000	34,750	29,200
			Available Fuel w/Executive Payload	25,600	29,000	20,050	34,300	38,959	31,200
Limits			M_{MO}	0.880	0.880	0.870	0.885	0.890	0.900
			Trans. Alt. FL/V_{MO}	FL 280/340	FL 280/340	FL 250/370	FL 270/340	FL 303/340	FL 270/370
			PSI	9.6	9.6	9.3	10.2	10.3	10.2
Airport Performance			TOFL (SL elev./ISA temp.)	5,050	5,600	5,360	5,150	5,540	5,705
			TOFL (5,000' elev.@25C)	7,336	8,200	7,615	7,680	6,798	8,045
			Hot/High Weight Limit	70,900	74,600	48,255	85,100	90,349	69,140
			NBAA IFR Range	3,854	4,328	4,710	5,969	5,520	5,795
			V2@SL ISA, MTOW	146	150	134	141	133	133
			V_{REF} w/4 Pax, NBAA IFR Res.	122	123	111	111	107	106
			Landing Distance w/4 Pax, NBAA IFR Res.	2,640	2,663	2,432	2,220	2,189	2,120
Climb			Time to Climb/Altitude	15/FL 370	16/FL 370	18/FL 370	16/FL 370	18/FL 370	18/FL 370
			FAR 25 Engine-Out Rate (fpm)	790	712	703	707	704	615
			FAR 25 Engine-Out Gradient (ft./nm)	323	285	315	301	318	280
Ceilings (ft.)			Certificated	45,000	45,000	51,000	51,000	51,000	51,000
			All-Engine Service	43,200	42,400	40,100	44,000	44,600	41,360
			Engine-Out Service	26,000	25,000	31,400	27,700	20,600	31,560
			Sea-Level Cabin	26,700	26,700	25,300	29,200	30,125	29,200
Cruise	Long Range		TAS	459	459	431	459	470	459
			Fuel Flow	2,510	2,585	1,670	2,425	2,856	2,260
			Altitude	FL 450	FL 450	FL 430	FL 450	FL 450	FL 430
			Specific Range	0.183	0.178	0.258	0.189	0.165	0.203
	High Speed		TAS	476	476	474	488	499	497
			Fuel Flow	2,969	3,055	2,230	3,021	3,582	3,205
			Altitude	FL 410	FL 410	FL 390	FL 430	FL 410	FL 390
			Specific Range	0.160	0.156	0.213	0.162	0.139	0.155
NBAA IFR Ranges (200-nm alternate)	Max Payload (w/available fuel)		Nautical Miles	3,008	3,549	3,810	4,893	4,958	5,000
			Average Speed	450	452	420	451	463	453
			Trip Fuel	18,922	22,622	16,386	28,093	33,418	26,820
			Specific Range/Altitude	0.159/FL 450	0.157/FL 450	0.233/FL 430	0.174/FL 490	0.148/FL 470	0.186/FL 450
	Max Fuel (w/available payload)		Nautical Miles	3,722	4,216	4,595	5,788	5,381	5,670
			Average Speed	451	453	421	453	463	454
			Trip Fuel	22,557	26,023	18,955	32,142	35,695	29,560
			Specific Range/Altitude	0.165/FL 450	0.162/FL 450	0.242/FL 430	0.180/FL 490	0.151/FL 470	0.192/FL 470
	Four Passengers (w/available fuel)		Nautical Miles	3,828	4,328	4,695	5,941	5,520	5,760
			Average Speed	452	452	420	453	463	454
			Trip Fuel	22,624	26,087	18,955	32,193	35,761	29,560
			Specific Range/Altitude	0.169/FL 450	0.166/FL 450	0.248/FL 430	0.185/FL 490	0.154/FL 470	0.195/FL 470
	Ferry		Nautical Miles	3,876	4,382	4,765	6,009	5,572	5,840
			Average Speed	453	453	420	453	463	454
			Trip Fuel	22,653	26,116	18,955	32,216	35,786	29,560
			Specific Range/Altitude	0.171/FL 450	0.168/FL 450	0.251/FL 430	0.187/FL 490	0.156/FL 470	0.198/FL 470
Missions (4 passengers)	300 nm		Runway	3,217	3,225	2,880	3,366	2,483	2,500
			Flight Time	0+46	0+46	0+47	0+47	0+46	0+46
			Fuel Used	2,591	2,599	1,685	2,380	2,755	2,120
			Specific Range/Altitude	0.116/FL 450	0.115/FL 450	0.178/FL 450	0.126/FL 450	0.109/FL 490	0.142/FL 450
	600 nm		Runway	3,252	3,258	2,880	3,388	2,572	2,515
			Flight Time	1+25	1+25	1+27	1+27	1+23	1+25
			Fuel Used	4,099	4,113	2,705	3,700	4,442	3,325
			Specific Range/Altitude	0.146/FL 450	0.146/FL 450	0.222/FL 470	0.162/FL 510	0.135/FL 490	0.180/FL 470
	1,000 nm		Runway	3,296	3,304	2,880	3,413	2,693	2,640
			Flight Time	2+18	2+18	2+20	2+20	2+13	2+17
			Fuel Used	6,154	6,176	4,160	5,511	6,747	4,985
			Specific Range/Altitude	0.162/FL 450	0.162/FL 450	0.240/FL 470	0.181/FL 510	0.148/FL 470	0.201/FL 470
Remarks			Certification Basis	FAR 25, 2004	FAR 25, 2004 Optional 74,600-lb. MTOW.	FAR 25/EASA 25, 1979/10 Includes EASy.	FAR 25, 2002	FAR 25, 1998/04; EASA 25, 2004 Includes Global Vision.	FAR/EASA 25, 2007 Includes EASy II and DFCS; 2013 delivery price.

JETS 20,000-LB. MTOW OR GREATER

			Manufacturer	Embraer	Airbus	Boeing	Airbus	Boeing
			Model	Lineage 1000 ERJ 190-100 ECJ	Elite A318-112	BBJ2 737-800	A320 Prestige A320-214	BBJ3 737-900ER
			BCA Equipped Price	$53,000,000	$60,000,000	$83,000,000	$90,000,000	$91,000,000
Characteristics			Seating	3+13/19	4+18/132	4+19/189	4+18/179	4+19/215
			Wing Loading	120.7	113.6	129.9	130.3	139.9
			Power Loading	3.25	3.22	3.19	3.18	3.44
			Noise (EPNdB): TO/Sideline/APR	86.4/92.7/92.5	83.0/91.9/93.9	86.0/94.4/96.4	85.5/93.4/95.5	88.4/93.8/96.4
External Dimensions (ft.)			Length	118.9	103.2	129.5	123.3	138.2
			Height	34.7	41.1	41.2	38.6	41.2
			Span	94.2	111.8	117.4	111.8	117.4
Internal Dimensions (ft.)			**Length:** OA/Net	84.3/84.3	70.2/70.2	98.3/98.3	90.3/90.3	107.2/107.2
			Height	6.6	7.4	7.1	7.4	7.1
			Width: Max/Floor	8.8/8.0	12.1/11.7	11.6/10.7	12.1/11.7	11.6/10.7
Baggage			**Internal:** Cu. ft./lb.	323/2,293	395/NA	NA/NA	NA/NA	NA/NA
			External: Cu. ft./lb.	120/705	430/NA	721/NA	985/NA	882/NA
Power			Engines	2 GE CF34-10E7-B	2 CFMI CFM56-5B9/3*	2 CFMI CFM56-7B27E	2 CFMI CFM56-5B4/3*	2 CFMI CFM56-7B27E
			Output (lb. each)/Flat Rating	18,500/ISA+15C	23,300/ISA+30C	27,300/ISA+15C	27,000/ISA+29C	27,300/ISA+15C
			Inspection Interval	OC	OC	OC	OC	OC
Weights (lb.)			Max Ramp	120,591	150,800	174,700	172,850	188,200
			Max Takeoff	120,152	149,900	174,200	171,950	187,700
			Max Landing	100,972	126,765	146,300	145,500	157,300
			Zero Fuel	80,469	120,150c	138,300c	137,800c	149,300c
			BOW	70,844	93,550	103,800	103,700	111,650
			Max Payload	9,625	26,600	34,500	34,100	37,650
			Useful Load	49,747	57,250	70,900	69,150	76,550
			Executive Payload	2,600	3,600	3,800	3,600	3,800
			Max Fuel	48,217	48,660	69,961	53,450	73,472
			Available Payload w/Max Fuel	1,530	8,590	939	15,700	3,078
			Available Fuel w/Max Payload	40,122	30,650	36,400	35,050	38,900
			Available Fuel w/Executive Payload	47,147	48,660	67,100	53,450	72,750
Limits			M_{MO}	0.820	0.820	0.820	0.820	0.820
			Trans. Alt. FL/V_{MO}	FL 289/320	FL 250/350	FL 260/340	FL 250/350	FL 260/340
			PSI	8.8	8.2	9.0	8.3	9.0
Airport Performance			TOFL (SL elev./ISA temp.)	6,128	5,870	6,985	6,920	8,350
			TOFL (5,000' elev.@25C)	9,500	7,660	12,850	9,355	14,500
			Hot/High Weight Limit	111,565	149,900	174,200	171,950	175,500p
			NBAA IFR Range	3,838	4,250	5,648	4,300	4,751
			V_2@SL ISA, MTOW	140	NA	152	NA	NA
			V_{REF} w/4 Pax, NBAA IFR Res.	110	NA	122	NA	122
			Landing Distance w/4 Pax, NBAA IFR Res.	2,216	2,150	2,515	2,400	2,510
Climb			Time to Climb/Altitude	28/FL 350	20/FL 370	27/FL 370	23/FL 360	26/FL 350
			FAR 25 Engine-Out Rate (fpm)	NA	NA	NA	NA	NA
			FAR 25 Engine-Out Gradient (ft./nm)	NA	NA	NA	NA	NA
Ceilings (ft.)			Certificated	41,000	41,000	41,000	39,000	41,000
			All-Engine Service	35,000	NA	37,700	NA	35,000
			Engine-Out Service	19,178	NA	20,000	NA	NA
			Sea-Level Cabin	23,190	MA	18,500	NA	18,500
Cruise	Long Range		TAS	455	444	454	451	455
			Fuel Flow	4,190	4,230	5,043	4,730	5,427
			Altitude	FL 380	FL 390	FL 390	FL 370	FL 360
			Specific Range	0.109	0.105	0.090	0.095	0.084
	High Speed		TAS	472	470	470	473	473
			Fuel Flow	5,035	5,360	5,721	5,860	6,272
			Altitude	FL 350	FL 370	FL 360	350	FL 350
			Specific Range	0.094	0.088	0.082	0.081	0.075
NBAA IFR Ranges (200-nm alternate)	Max Payload (w/available fuel)		Nautical Miles	3,486	2,048	2,279	2,100	2,223
			Average Speed	439	426	433	428	436
			Trip Fuel	35,671	24,129	29,968	27,936	32,052
			Specific Range/Altitude	0.098/FL 390	0.085/FL 370	0.076/FL 370	0.075/FL 350	0.069/FL 350
	Max Fuel (w/available payload)		Nautical Miles	4,540	4,000	5,726	3,852	5,452
			Average Speed	441	437	445	438	447
			Trip Fuel	44,072	42,710	64,835	46,930	67,949
			Specific Range/Altitude	0.103/FL 410	0.094/FL 410	0.088/FL 410	0.082/FL 390	0.080/FL 390
	Four Passengers (w/available fuel)		Nautical Miles	4,597	4,300	5,622	4,330	5,496
			Average Speed	441	436	444	438	446
			Trip Fuel	44,339	43,601	63,899	48,057	67,985
			Specific Range/Altitude	0.104/FL 410	0.099/FL 410	0.088/FL 410	0.090/FL 390	0.081/FL 390
	Ferry		Nautical Miles	4,636	4,300	5,754	4,380	5,555
			Average Speed	441	436	444	438	447
			Trip Fuel	44,371	43,653	64,855	48,108	68,030
			Specific Range/Altitude	0.104/FL 410	0.099/FL 410	0.089/FL 410	0.091/FL 390	0.082/FL 390
Missions (4 passengers)	300 nm		Runway	3,192	3,675	3,375	3,670	3,700
			Flight Time	0+47	0+53	0+56	0+55	0+55
			Fuel Used	3,480	4,077	4,547	4,265	4,841
			Specific Range/Altitude	0.086/FL 390	0.074/FL 370	0.066/FL 310	0.070/FL 350	0.062/FL 290
	600 nm		Runway	3,208	3,700	3,505	3,700	3,855
			Flight Time	1+28	1+33	1+32	1+34	1+32
			Fuel Used	5,868	6,694	7,268	7,080	7,775
			Specific Range/Altitude	0.102/FL 410	0.090/FL 410	0.083/FL 410	0.085/FL 390	0.077/FL 390
	1,000 nm		Runway	3,310	3,760	3,680	3,760	4,045
			Flight Time	2+21	2+27	2+26	2+28	2+26
			Fuel Used	9,146	10,225	11,088	10,970	11,943
			Specific Range/Altitude	0.109/FL 410	0.098/FL 410	0.090/FL 410	0.091/FL 390	0.084/FL 390
Remarks			Certification Basis	FAR/EASA 25, 2008	FAR 25, 2003 *Also avail. with PW6124; incl. 2 add'l center tanks; price incl. VIP cabin.	FAR 25 A 77, 1967/98 All passenger and range missions flown with eight passengers.	FAR 25, 1999 *Also avail. with 26,500-lbf IAEV2527M-A5; incl. 2 add'l center tanks and VIP cabin.	FAR 25 A 77, 1967/98/07 All passenger and range missions flown with eight passengers.

ULTRA-LONG-RANGE JETS

Manufacturer			Gulfstream Aero.	Bombardier	*Gulfstream Aero.*	Boeing	Airbus
Model			G550 GV-SP	Global 6000 BD-700-1A10	*G650* *GVI*	BBJ 737-700IGW	Corporate Jetliner A319-133
BCA Equipped Price			$56,250,000	$58,501,000	*$64,500,000*	$70,000,000	$80,000,000
Characteristics		Seating	4+16/19	4+13/19	*4+16/19*	4+19/149	4+19/156
		Wing Loading	80.1	97.4	*77.6*	127.5	127.8
		Power Loading	2.96	3.37	*3.09*	3.13	3.12
		Noise (EPNdB): TO/Sideline/APR	79.3/90.2/90.8	82.4/87.9/89.7	*NA/NA/NA*	85.4/94.9/95.8	85.4/94.6/94.2
External Dimensions (ft.)		Length	96.4	99.4	*99.8*	110.3	111.0
		Height	25.8	25.5	*25.7*	41.2	38.6
		Span	93.5	94.0	*99.6*	117.4	111.8
Internal Dimensions (ft.)		**Length:** OA/Net	50.1/42.6	48.4/43.2	*53.6/46.8*	79.2/79.2	78.0/78.0
		Height	6.2	6.3	*6.4*	7.1	7.4
		Width: Max/Floor	7.3/5.5	8.2/6.9	*8.5/7.0*	11.6/10.7	12.2/11.6
Baggage		**Internal:** Cu. ft./lb.	226/2,500	195/1,000	*235/2,500*	NA/NA	160/NA
		External: Cu. ft./lb.	—/—	—/—	—/—	169/NA	NA/NA
Power		Engines	2 RR BR700-710C4-11	2 RR BR700-710A2-20	*2 RR* *BR725*	2 CFMI CFM56-7B27E	2 CFMI CFM56-5B7/3*
		Output (lb. each)/Flat Rating	15,385/ISA+15C	14,750/ISA+20C	*16,100/ISA+15C*	27,300/ISA+15C	27,000/ISA+29C
		Inspection Interval	8,000 or OCt	OC	*10,000t*	OC	OC
Weights (lb.)		Max Ramp	91,400	99,750	*100,000*	171,500	169,530
		Max Takeoff	91,000	99,500	*99,600*	171,000	168,650
		Max Landing	75,300	78,600	*83,500*	134,000	137,790
		Zero Fuel	54,500c	58,000c	*60,500c*	126,000c	128,970c
		BOW	48,700	52,230	*54,000*	97,740	96,450
		Max Payload	5,800	5,770	*6,500*	28,260	32,520
		Useful Load	42,700	47,520	*46,000*	73,760	73,080
		Executive Payload	3,200	2,600	*3,200*	3,800	3,800
		Max Fuel	40,994	44,716	*44,200*	71,737	72,560
		Available Payload w/Max Fuel	1,706	2,804	*1,800*	2,023	520
		Available Fuel w/Max Payload	36,900	41,750	*39,500*	45,500	40,560
		Available Fuel w/Executive Payload	39,500	44,716	*42,800*	69,960	69,280
Limits		M_{MO}	0.885	0.890	*0.925*	0.820	0.820
		Trans. Alt. FL/V_{MO}	FL 270/340	FL 303/340	*NA/NA*	FL 260/340	FL 250/350
		PSI	10.2	10.3	*10.7*	9.0	8.3
Airport Performance		TOFL (SL elev./ISA temp.)	5,910	6,476	*6,000*	6,085	6,170
		TOFL (5,000' elev.@25C)	9,070	7,880	*NA*	10,200	8,360
		Hot/High Weight Limit	91,000	94,513p	*NA*	170,827	168,650
		NBAA IFR Range	6,738	5,633	*7,000*	6,260	6,000
		V_2 @ SL, ISA, MTOW	147	142	*NA*	141	137
		V_{REF} w/4 Pax, NBAA IFR Res.	112	110	*NA*	116	111
		Landing Distance w/4 Pax, NBAA IFR Res.	2,240	2,236	*NA*	2,360	2,220
Climb		Time to Climb/Altitude	18/FL 370	20/FL 370	*NA/FL 370*	25/FL 370	22/360
		FAR 25 Engine-Out Rate (fpm)	594	474	*NA*	NA	NA
		FAR 25 Engine-Out Gradient (ft./nm)	242	200	*NA*	NA	NA
Ceiling (ft.)		Certificated	51,000	51,000	*51,000*	41,000	41,000
		All-Engine Service	42,700	42,400	*NA*	38,000	36,000
		Engine-Out Service	25,820	18,000	*NA*	20,500	18,000
		Sea-Level Cabin	29,200	30,125	*31,900*	18,500	22,000
Cruise	Long Range	TAS	459	470	*488*	452	447
		Fuel Flow	2,563	3,043	*NA*	4,707	4,695
		Altitude	FL 450	FL 450	*NA*	FL 390	FL 370
		Specific Range	0.179	0.154	*NA*	0.096	0.095
	High Speed	TAS	488	499	*516*	470	470
		Fuel Flow	3,228	3,789	*NA*	5,567	5,830
		Altitude	FL 430	FL 410	*NA*	FL 370	370
		Specific Range	0.151	0.132	*NA*	0.084	0.081
NBAA IFR Ranges (200-nm alternate)	Max Payload (w/available fuel)	Nautical Miles	5,767	5,876	*NA*	3,291	2,679
		Average Speed	452	463	*NA*	437	434
		Trip Fuel	33,993	40,480	*NA*	39,571	33,677
		Specific Range/Altitude	0.170/FL 490	0.145/FL 450	*NA/NA*	0.083/FL 390	0.080/FL 370
	Max Fuel (w/available payload)	Nautical Miles	6,698	6,111	*NA*	6,229	6,134
		Average Speed	454	464	*NA*	442	442
		Trip Fuel	38,202	41,780	*NA*	66,866	66,673
		Specific Range/Altitude	0.175/FL 490	0.146/FL 450	*NA/NA*	0.093/FL 410	0.092/FL 410
	Eight Passengers (w/available fuel)	Nautical Miles	6,708	6,163	*7,000*	6,237	6,002
		Average Speed	453	464	*481*	442	442
		Trip Fuel	38,205	41,780	*40,991*	66,871	65,558
		Specific Range/Altitude	0.176/FL 490	0.148/FL 450	*0.171/FL 510*	0.093/FL 410	0.092/FL 410
	Ferry	Nautical Miles	6,853	6,258	*NA*	6,306	6,200
		Average Speed	454	464	*NA*	442	442
		Trip Fuel	38,251	41,780	*NA*	66,914	67,207
		Specific Range/Altitude	0.179/FL 510	0.150/FL 470	*NA/NA*	0.094/FL 410	0.092/FL 410
Missions (8 passengers)	1,000 nm	Runway	3,436	2,832	*NA*	3,480	4,075
		Flight Time	2+20	2+13	*2+13*	2+27	2+26
		Fuel Used	5,599	6,838	*5,777*	10,422	10,370
		Specific Range/Altitude	0.179/FL 490	0.146/FL 490	*0.173/FL 510*	0.096/FL 410	0.096/FL 410
	3,000 nm	Runway	3,599	3,818	*NA*	4,275	4,280
		Flight Time	6+42	6+20	*6+19*	6+55	6+54
		Fuel Used	15,474	19,461	*15,967*	29,650	30,070
		Specific Range/Altitude	0.194/FL 490	0.154/FL 490	*0.188/FL 510*	0.101/FL 410	0.100/FL 410
	6,000 nm	Runway	5,277	6,144	*NA*	5,870	6,160
		Flight Time	13+15	12+31	*12+30*	13+34	13+35
		Fuel Used	33,428	41,780	*34,046*	63,852	65,528
		Specific Range/Altitude	0.179/FL 490	0.144/FL 450	*0.176/FL 510*	0.094/FL 410	0.092/FL 410
Remarks		Certification Basis	FAR 25, 1997/03/02	FAR 25, 1998/03; JAR 25 Includes BEVS and GlobalVision.	*FAR 25 pending*	FAR 25 A 77, 1967/98	FAR 25, 1999 *Also avail. with 26,500-lbf IAEV2527M-A5; incl. 6 add'l center tanks plus VIP cabin.

Used Aircraft 2012

By Robert A. Searles
inspiracreative@optimum.net

Perhaps at no time in recent memory has the long-term direction of the market for previously owned, turbine-powered business airplanes been more difficult to forecast. Ever since used-aircraft prices plummeted and inventories rose dramatically in late 2008, optimists have been searching for signs that a turnaround was imminent. As the economic malaise dragged on, however, predictions for recovery kept getting pushed out further and further.

Year-end 2011 numbers for the used aircraft market appeared to be a harbinger of better days ahead. However, the political uncertainty associated with a U.S. presidential election year — along with lingering concerns about the strength of the worldwide economy, the threat of a major conflict in the Middle East and the possibility of more European sovereign debt problems — could easily upset the market. Consequently, as the first quarter drew to a close, pundits remained divided on the long-term outlook for used airplanes.

The lack of consensus can be traced, in part, to mixed results for the first several months of this year. On the plus side, the first-quarter edition of the *Aircraft Bluebook* noted the continuing demand for top-of-the-line jets and the improving activity and stable pricing of the turboprop sector. On the other hand, the Bluebook said, "For midrange and light-jet business aircraft, values continue to slightly decline. Until inventories of bargain-priced jets have been eliminated, expect values to remain artificially low."

According to Jetnet, the January 2012 figures showed that the percentage of the fleet for sale in all market sectors was down compared to January 2011, with business turboprops coming in well below the 10% mark, "clearly moving it into a seller's market." Jetnet also reported that business jet and business turboprop sale transactions increased 3.7% and 1.4%, respectively, in January 2012, compared to January 2011. And pre-owned aircraft categories showed large increases in average asking-price percentages, compared to a year earlier. But those comparisons benefit from weak prior-year numbers.

Looking at a smaller slice of the market — in-production business jets — JPMorgan's financial analysts were not as sanguine. "Evidence of a recovery on the low end is still not compelling," they declared. "Older used jets are still plentiful, while younger jets are gradually selling. Overall, used inventories, which have fallen from the peak and continue to improve in some portions of the market, are still not at particularly low levels. It is hard to envision a new jet pickup with so many low-priced used jets still available. Continued price weakness and a lack of sustained inventory declines for these models have increased our skepticism about a recovery."

Dennis Rousseau of Aircraftpost.com pointed out that the number of aircraft for sale is actually rising for many types, while transaction prices are still dropping. Plus, the macro economic picture is not rosy. "By 2012, the economic recovery was supposed to be here. I don't see it. Plus, fuel prices are going through the ceiling."

However, Rousseau does see plenty of opportunities for would-be buyers. "What we are seeing is value. Pricing is more in line with the reality of the markets. We are running at about 30% under a normalized market," which offers buyers "historic bargains."

For the price operators paid for a small jet in 2008 they can buy a medium jet today, added Rousseau, and some operators are trading up. "People are buying not necessarily for their travel needs today, but for the foreseeable future."

Gene Clow of Great Circle Aircraft, a Kirkland, Wash.-based aircraft brokerage, minces no words: "Thus far, 2012 is starting out as a dismal year for the pre-owned market." Not only is the average number of planes sold each week down compared to the past two years, "the most alarming aspect of the market is the number of airplanes being added. On Jan. 3, I predicted, based upon 2010 and 2011 data, that 2012 would see continuing improvements. I can no longer support that prediction."

JBA Aviation's Toby Smith said, "Depending on whom you talk to, some brokers seem to be very busy right now, while others seem to be quite slow. Personally, I have found a number of prospective buyers in various markets, but they tend to be extremely patient and very slow to move for one reason or another. Some of our listings are getting a lot of activity when priced right; others do not generate many phone calls at all, regardless of pricing."

"I have not heard many buyers saying that they need an aircraft in service quickly because of travel demands," continued Smith. "Most seem to have an interest in a particular model but are willing to sit on the sidelines until an opportunity arises that represents an incredible value. When a new aircraft that is priced right comes to market, or an existing aircraft announces a significant price change, buyers do seem to be prepared to jump on it. However, the opportunity must be well below market, which leads to further price erosion in markets that are already at historical lows."

When a new aircraft that is priced right comes to market, or an existing aircraft announces a significant price change, buyers do seem to be prepared to jump on it.

"The next few months should be very telling," continued Smith. "I think we can expect a modest surge in buying and selling starting this spring and continuing into early summer. Things will likely begin to slow down in June and July. I can also see a few pitfalls that might point toward a longer than usual summer slowdown."

Vref publisher Fletcher Aldredge observed, "Recent economic headlines have been, well, not that bad. Is this just a possible blip, or is it the real recovery? In an election year, it is almost impossible to tell.

"It took a few years, but sellers are coming to the realization that if they really want to sell, price matters," added Aldredge. "Buyers and sellers have adapted to this strange new marketplace. Fewer sellers cling to high asking prices as they wait for a turnaround that's 'just around the corner.' And fewer buyers are confident that prices will be even lower tomorrow. This may not be creating a perfect storm, but it sure has made it rain." BCA

MULTIENGINE PISTON

Model			Beech Duchess BE-76	Beech Baron BE-B55	Beech Baron BE-E55	Beech Baron BE-58TC	Beech Baron BE-58P	Beech Duke BE-B60
Serial Number			s.n. ME-427 – ME-437	s.n. TC-2421 - TC-2456	s.n. TE-1196 – TE-1201	s.n. TK-146 – TK-149	s.n. TJ-471 – TJ-497	s.n. P-581 – P-596
Prices	*BCA* Equiped		$221,166 ('85)	$313,499 ('85)	$317,077 ('85)	$442,701 ('84)	$582,985 ('86)	$598,815 ('83)
	Vref 2012		$80,000	$135,000	$160,000	$190,000	$350,000	$215,000
Configuration	Engines		2 Lyc O-360-A1G6D	2 Cont IO-470-L	2 Cont IO-520-CB	2 Cont TSIO-520-WB	2 Cont TSIO-520-WB	2 Lyc TIO-541-E1C4
	Output		180 hp ea.	285 hp ea.	285 hp ea.	325 hp ea.	325 hp ea.	380 hp ea.
	TBO		2,000	1,500	1,700	1,600	1,600	1,600
	Seating		1+3/3	1+5/5	1+5/5	1+5/5	1+5/5	1+5/5
Weighs (lb)	Max Ramp		3,916	5,121	5,324	6,240	6,240	6,819
	BOW		2,617	3,464	3,509	4,078	4,319	4,721
	Useful		1,299	1,657	1,815	2,162	1,921	2,098
	Max Fuel		600	816	996	1,140	1,140	1,392
Limits	V_{NE}		194	223	223	234	234	235
	V_{NO}		154	182	195	195	195	208
	VA		132	156	156	169	169	160
Cruise @ 65%	TAS		155	179	190	198	210	212
	FF		110	136	158	192	175	220
	FL		80	80	80	100	200	200
Range	Seats Full	nm	566	189	572	862	845	591
		Blk. Spd.	154	174	188	196	207	205
		SR	1.36	1.14	1.16	1	1.07	0.85
	Tanks Full	nm	707	893	1,036	999	1,108	1,104
		Blk. Spd.	154	178	189	197	208	208
		SR	1.37	1.25	1.18	1	1.1	0.9
Certification Basis			FAR 23, 1978/78	CAR 3, 1957/69	CAR 3, 1957/69	FAR 23, 1974/76	FAR 23, 1974/74	FAR 23, 1968/74
Remarks								

MULTIENGINE PISTON

Model			Cessna 310R CE-310R	Cessna Turbo CE-T310R	Cessna Crusader CE-T303	Cessna 340A CE-340A II	Cessna Titan CE-404	Cessna Businessliner CE-402C
Serial Number			s.n. 310R2101 – 2140	s.n. 310R2140 -2140	s.n. TC-258- 315	s.n. 340A-1801 – 17	s.n. 4040801- 859	s.n. 402C-0808 – 1020
Prices	*BCA* Equiped		$229,490 ('81)	$257,025 ('81)	$298,030 ('85)	$500,660 ('85)	$524,693 ('81)	$524,693 ('85)
	Vref 2012		$135,000	$1363,000	$145,000	$240,000	$220,000	$245,000
Configuration	Engines		2 Cont IO-520-MB	2 Cont TSIO-520-BB	2 Cont TSIO-520-AE	2 Cont TSIO-520-NB	2 Cont GTSIO-520-M	2 Cont TSIO-520-VB
	Output		285 hp ea.	285 hp ea.	250 hp ea.	310 hp ea.	375 hp ea.	325 hp ea.
	TBO		NA	NA	2,000	1,600	1,600	1,600
	Seating		1+5/6	1+5/6	1+5/5	1+5/5	1+10/11	1+7/8
Weighs (lb)	Max Ramp		5,535	5,535	5,175	6,025	8,450	6,885
	BOW		3,806	3,949	3,500	4,411	5,685	4,870
	Useful		1,729	1,586	1,675	1,614	2,765	2,015
	Max Fuel		1,218	1,218	918	1,218	2,064	1,236
Limits	V_{NE}		227	227	206	234	238	231
	V_{NO}		183	183	172	200	210	200
	VA		150	150	147	155	158	147
Cruise @ 65%	TAS		180	193	170	206	183	187
	FF		164	171	147	180	229	197
	FL		70	120	100	200	120	100
Range	Seats Full	nm	390	382	327	535	394	414
		Blk. Spd.	164	173	165	193	168	183
		SR	0.96	0.95	0.98	0.92	0.66	0.89
	Tanks Full	nm	1,148	1,160	816	1,177	1,432	990
		Blk. Spd.	174	186	168	203	179	185
		SR	1.05	1.06	1.07	1.09	0.76	0.92
Certification Basis			CAR 3, 1954	CAR 3, 1954	FAR 23, 1980/81	CAR 3, 1961/75	FAR 23, 1976	CAR 3, 1964/78
Remarks			ZFW limited.	ZFW limited.				

MULTIENGINE PISTON

Model			Cessna Chancellor CE-414A	Cessna Golden Eagle CE-421C	Piper Turbo Seminole PA-44-180T	Piper Aztec F PA-23-250	Piper Turbo Aztec F PA-23-250T	Piper Aerostar PA-601B
Serial Number			s.n. 414A-1007 - 212	s.n. 421C1801 – 807	s.n. 44-8207001 – 020	s.n. 8154001 – 30	s.n. 8154001 – 030	s.n. 8448162153 – 157
Prices	*BCA* Equiped		$696,270 ('85)	$789,350 ('85)	$159,250 ('82)	$217,340 ('81)	$245,195 ('81)	$302,615 ('81)
	Vref 2012		$370,000	$430,000	$85,000	$110,000	$121,000	$126,000
Configuration	Engines		2 Cont TSIO-520-NB	2 Cont GTSIO-520	2 Lyc T0-360-E1A6D	2 Lyc IO-540-C4B5	2 Lyc TIO-540-C1A	2 Lyc IO-540-S1A5
	Output		310 hp ea.	375 hp ea.	180 hp ea.	250 hp ea.	250 hp ea.	290 hp ea.
	TBO		1,600	1,600	1,800	NA	NA	NA
	Seating		1+6/7	1+6/7	1+3/3	1+5/6	1+5/6	1+5/6
Weighs (lb)	Max Ramp		6,785	7,500	3,943	5,200	5,200	6,025
	BOW		5,170	5,498	2,586	3,360	3,537	4,138
	Useful		1,615	2,002	1,347	1,840	1,663	1,887
	Max Fuel		1,236	1,572	648	1,062	1,062	993
Limits	V_{NE}		232	238	194	216	216	243
	V_{NO}		200	200	165	172	172	217
	VA		144	150	135	129	129	167
Cruise @ 65%	TAS		200	218	156	168	175	212
	FF		178	229	114	142	133	184
	FL		200	200	100	70	120	120
Range	Seats Full	nm	252	526	634	772	932	562
		Blk. Spd.	187	211	154	161	168	196
		SR	0.9	0.83	1.34	1.11	1.22	1.02
	Tanks Full	nm	1,257	1,320	758	1,081	1,194	914
		Blk. Spd.	193	215	154	163	170	202
		SR	1.05	1.1	1.35	1.13	1.24	1.07
Certification Basis			CAR 3, 1964/77	CAR 3, 1964/75	FAR 23, 1978	CAR 3, 1954	CAR 3, 1954	FAR 23, 1968
Remarks						ZFW limited.	ZFW limited.	

MULTIENGINE PISTON

Model			Aerostar PA-600A	Piper Seminole PA-44-180	Piper Navajo PA-31-310 C	Piper Navajo C/R PA-31-325	Piper Chieftain PA-31-350	Piper Mojave PA-31P-350
Serial Number			s.n. 8338161237 - 262	s.n. 4495013, 4496001 — 005	s.n. 310-2001 – 77	s.n. 8312001 – 19	s.n. 8452001 – 21	s.n. 8414001 – 14-050
Prices	BCA Equiped		$308,638 ('82)	$347,645 ('92)	$416,030 ('82)	$484,440 ('83)	$561,585 ('86)	$736,675 ('86)
	Vref 2012		$118,000	$150,000	$190,000	$225,000	$275,000	$285,000
Configuration	Engines		2 Lyc IO-540-K1J5	2 Lyc IO-360-A1H6	2 Lyc TIO-540-A2C	2 Lyc TIO-540-F2BD	2 Lyc TIO-540-J2BD	2 Lyc TIO-540-V2AD
	Output		290 hp ea.	180 hp ea.	310 hp ea.	325 hp ea.	350 hp ea.	350 hp ea.
	TBO		1,800	2,000	1,800	1,600	1,600	2,000
	Seating		1+5/5	1+3/3	1+6/7	1+6/7	1+7/9	1+5/6
Weighs (lb)	Max Ramp		5,525	3,816	6,536	6,540	7,045	7,245
	BOW		3,917	2,551	4,651	4,733	4,870	5,598
	Useful		1,608	1,265	1,885	1,807	2,175	1,647
	Max Fuel		993	636	1,124	1,425	1,416	1,428
Limits	V_{NE}		243	194	236	236	236	236
	V_{NO}		217	165	187	187	187	187
	VA		163	133	159	159	162	164
Cruise @ 65%	TAS		205	152*	177	181	184	184
	FF		164	100*	169	176	185	185
	FL		80	080*	100	100	100	100
Range	Seats Full	nm	370	152	540	424	663	663
		Blk. Spd.	210	1.42	173	175	178	178
		SR	1.3		0.97	0.89	1.04	1.04
	Tanks Full	nm	1,101	814	999	1,265	1,207	1,207
		Blk. Spd.	207	152	175	179	181	181
		SR	1.27	1.45	1.00	0.98	0.95	0.95
Certification Basis			FAR 23, 1967/78	FAR 23, 1978	CAR 3, 1966/77	CAR 3, 1966/74	CAR 3, 1966/72	CAR 3, 1965/85
Remarks				*Recommended cruise.				

TURBOPROPS

Model			Beech King Air BE-F90	Beech King Air BE-F90-1	Beech King Air BE-B100	Beech King Air BE-C90A	Beech King Air B200	Beech Super King Air BE-300
Serial Number			s.n. LA202, 205 -214	s.n. LA226 – 236	s.n. BE133, 134, 136, 137	s.n. LJ1270-1287, 1289-1294, 1297	s.n. BB1774 1780-1800	s.n. FA205-FA215
Prices	*BCA* Equiped		$1,423,910 ('83)	$1,225,000 ('86)	$630,000 ('83)	$2,050,906 ('91)	$3,823,000 ('02)	$3,640,000 ('90)
	Vref 2012		$1,100,000	$1,225,000	$630,000	$975,000	$2,150,000	$1,550,000
Configuration	Engines		2 P&WC PT6A-135	2 P&WC PT6A-135A	2 ASE TPE331-6	2 P&WC PT6A-21	2 P&WC PT6A-42	2 P&WC PT6A-60A
	Output		750 shp ea.	750 shp ea.	715 shp ea.	550 shp ea.	850 shp ea.	1,050 shp ea.
	TBO		3,500	3,500	3,600	3,500	3,600	3,000
	Seating		1+7/9	1+7/9	1+8/10	1+7/9	1/7+15	1+7/15
Weighs (lb)	Max Ramp		11,030	11,030	11,875	10,160	12,590	14,100
	BOW		7,169	7,259	7,714	6,780	8,640	8,837
	Useful		3,861	3,771	4,161	3,380	3,950	5,263
	Max Fuel		3,149	3,249	3,149	2,573	3,645	3,611
Limits	V_{MO}		250	250	226	226	260	260
	V_A		169	169	170	169	182	182
	PSI		5	5	4.6	5	6.5	6.5
Cruise	Recom.	TAS	251	270	261	NA	221*	301
		FF	472	498	540	NA	339*	612
		FL	260	260	210	NA	290*	290
	High Speed	TAS	260	275	268	247	292	315
		FF	606	648	710	592	700	698
		FL	180	180	120	160	220	280
NBAA Range	VFR	nm	928	1,384	1,153	NA	NA	NA
		Avg. Spd.	247	265	246	NA	NA	NA
		SR	NA	260	NA	NA	NA	NA
	IFR	nm	NA	1,229	NA	219	407**	977*
		Avg. Spd.	NA	265	NA	212	242**	236*
		SR	NA	260	NA	230*	330**	290*
Certification Basis			FAR 23, 1965/79	FAR 23, 1965/83	FAR 23, 1963/76	CAR 3, 1959/81		FAR 23-41C, 1984
Remarks						*Max payload.	*Long range. **Max payload.	*Max payload.

TURBOPROPS

Model			Commander 840 AE-840	Commander 980 AE-980	Commander 900 AE-900	Commander 1000 AE-1000	Piper Cheyenne IA PA—31T-500
Serial Number			s.n. 11732-11734	s.n. 95041-95084	s.n. 15038-15042	s.n. 96073-96210	s.n. 31T-1104004-17
Prices	*BCA* Equiped		$1,489,000 ('85)	$1,660,855 ('83)	$1,804750 ('85)	$1,935,000 ('85)	$1,118,053 ('86)
	Vref 2012		$1,150,000	$1,000,00	$1,200,000	$1,500,000	$470,000
Configuration	Engines		2 ASE TPE331-5-254K	2 ASE TPE331-10	2 ASE TPE331-5	2 ASE TPE331-10	2 P&WC PT6A-11
	Output		718 shp ea.	733 shp ea.	738 shp ea.	820 shp ea.	500 shp ea.
	TBO		3,600	3,000	3,600	3,000	3,500
	Seating		1+7/10	1+7/10	1+7/10	1+7/10	1+6/6
Weighs (lb)	Max Ramp		10,375	10,775	10,775	11,250	8,750
	BOW		7,011	7,395	7,599	5,547	5,903
	Useful		3,364	3,380	3,380	3,651	3,203
	Max Fuel		3,176	3,176	3,176	3,176	2,452
Limits	V_{MO}		243	252	252	252	246
	V_A		137	39	139	141	180
	PSI		5.2	6.7	6.7	6.7	5.5
Cruise	Recom.	TAS	275	264	264	281	253
		FF	440	376	376	385	525
		FL	270	310	310	350	160
	High Speed	TAS	284	282	282	301	260
		FF	556	538	538	464	550
		FL	200	210	NA	200	160
NBAA Range	VFR	nm	992	1,052	1,052	1,305	1,272
		Blk. Spd.	265	248	248	278	236
		SR	NA	NA	NA	NA	270
	IFR	nm	NA	NA	NA	NA	1,120
		Blk. Spd.	NA	NA	NA	NA	234
		SR	NA	NA	NA	NA	270
Certification Basis			CAR 3, 1955/80	CAR 3, 1956/81	CAR 3, 1956/81	CAR 3, 1961/81	CAR 3, 1966/83
Remarks							

TURBOPROPS

Model			Piper Cheyenne II XL PA-31T-620XL	Piper Cheyenne 400 LS PA-42-1000	Piper Cheyenne IIIA PA-42-720	Mitsubishi Solitaire MU-2B-40	Mitsubishi Marquise MU-2B-60
Serial Number			s.n. 31T-1166001-8	s.n. 5527042, -045	s.n. 5501057-1059	s.n. 458SA-459SA	s.n. 1567SA-1569SA
Prices	*BCA* Equiped		$1,153,930 ('86)	$4,552,407 ('91)	$4,037,046 ('93)	$1,372,435 ('85)	$1,837,550 ('85)
	Vref 2012		$730,000	$1,350,000	$1,050,000	$540,000	$650,000
Configuration	Engines		2 P&WC PT6A-135	2 Hon TPE331-14-801	2 P&WC PT6A-61	2 Hon TPE331-10	2 Hon TPE331-10
	Output		620 shp ea.	1,000 shp ea.	720 shp ea.	620 shp ea.	710 shp ea.
	TBO		3,500	3,000	3,000	3,000	3,000
	Seating		1+6/7	1+8/8	1 + 8/10	1+6/7	1+8/8
Weighs (lb)	Max Ramp		9,540	12,135	11,285	10,520	11,625
	BOW		7,300	7,943	7,228	7,395	9,985
	Useful		3,637	4,192	4,057	3,220	3,640
	Max Fuel		2,452	3,819	3,752	2,700	2,700
Limits	V_{MO}		246	246	246	250	250
	V_A		187	189	175	182	191
	PSI		5.5	7.5	6.3	6	6
Cruise	Recom.	TAS	246	278	223*	280	278
		FF	493	458	345*	388	441
		FL	250	350	280*	310	290
	High Speed	TAS	278	351	305	320	306
		FF	700	940	746	634	628
		FL	140	240	220	200	200
NBAA Range	VFR	nm	1,320	NA	592	1,092	997
		Avg. Spd.	220	NA	273	282	265
		SR	270	NA	280	NA	NA
	IFR	nm	1,282	727*	1,554	NA	NA
		Avg. Spd.	220	310*	289	NA	NA
		SR	270	350*	280	NA	NA
Certification Basis			CAR 3, 1966/81	FAR 23, 1979/84	FAR 23, 1979/83	CAR 3, 1976/78	CAR 3, 1974/77
Remarks				*Max payload.	*Long range.		

TURBOPROPS

Model			Fairchild Merlin IIIB SA-226TB	Fairchild Merlin IIIC SA-227-TT	Fairchild Merlin IVC SA-227-AT	Hawker Beechcraft Executive 1900D
Serial Number			s.n. T-309-369	s.n. TT-483-TT-541	s.n. AT-511-577	NA
Prices	*BCA* Equiped		$1,475,605 ('80)	$1,950,000 ('83)	$3,958,615 ('91)	$5,150,000 ('04)
	Vref 2012		$530,000	$640,000	$900,000	NA
Configuration	Engines		2 Hon TPE331-10U	2 Hon TPE331-10U	2 Hon TPE331-11U	2 P&WC PT6A-67D
	Output		900 shp ea.	900 shp ea.	1,100 shp ea.	1,279 shp ea.
	TBO		NA	3,000	3,600	6,000t
	Seating		1+8/9	1+8/9	1+12/14	2+12/19
Weighs (lb)	Max Ramp		12,600	12,600	14,600	17,230
	BOW		8,030	8,213	9,670	10,790
	Useful		4,570	4,387	4,930	6,440
	Max Fuel		4,342	4,342	4,342	4,458
Limits	V_{MO}		265	265	248	248
	V_A		194	189	176	178
	PSI		7	7	7	5
Cruise	Recom.	TAS	271	271	257	224*
		FF	427	437	454	536*
		FL	300	280	380	250*
	High Speed	TAS	302	303	285	277
		FF	671	710	680	746
		FL	170	150	170	250
NBAA Range	VFR	nm	1,527	2,300	NA	NA
		Avg. Spd.	252	271	NA	NA
		SR	NA	NA	NA	NA
	IFR	nm	NA	NA	623*	365
		Avg. Spd.	NA	NA	290*	226
		SR	NA	NA	270*	250
Certification Basis			CAR 3, 1966	CAR 3, 1965/81	CAR 3, SFAR 41, 1981	FAR 23, 1989
Remarks					*Max payload.	*Max payload.

JETS

Model			Bombardier Challenger CL-600	Bombardier Challenger CL-601-3A	Bombardier Challenger CL-601-3R	Cessna Citation I CE-500	Cessna Citation II CE-550	Citation S/II CE-S550
Serial Number			s.n. 1024-1028 1030-1032	s.n. 5103-5123	s.n. 5171-5194	s.n. 396-404	s.n. 485-487, 489-505	s.n. 147-160
Prices	*BCA* Equiped		$9,000,000 ('81)	$16,950,000 ('92)	$18,700,000 ('95)	$2,017,800 ('83)	$2,478,100 ('86)	$3,808,023 ('88)
	Vref 2012		$950,000	$3,700,000	$5,000,000	$560,000	$850,000	$1,150,000
Configuration	Engines		2 ALF 502-L	2 GE CF34-3A	2 GE CF34-3A1	2 P&WC JT15D-1B	2 P&WC JT15D-4	2 P&WC JT15D-4B
	Power		7,500 lb. ea.	8,650 lb. ea.	8,729 lb. ea.	2,200 lb. ea.	2,500 lb. ea.	2,500 lb. ea.
	TBO		OC	6,000	6,000	3,000	3,500	3,000
	Seating		2+11	2+9/19	2+9/19	2+6/7	2+7/9	2+7/9
Weighs (lb)	Max Ramp		40,550	43,250	45,250	12,000	13,500	15,300
	BOW		22,675	26,000	26,250	7,403	8,200	8,950
	Useful		17,875	17,250	19,000	4,597	5,472	6,350
	Max Fuel		16,725	16,422	17,655	3,780	4,971	5,777
Limits	M_{MO}		0.85	0.86	0.85	0.71	0.7	0.72
	V_{MO}		375	370	360	262	275	275
	V_{FE} (App.)		NA	175	230	200	200	202
	PSI		9.3	9.5	8.8	8.5	8.7	8.8
Cruise	Recom.	TAS	425*	424*	425*	349	376	402
		FF	1,710*	1,832*	1,700*	865	1,083	1,189
		FL	430*	410*	410*	370	350	350
	High Speed	TAS	443	459	459	NA	376	402
		FF	1,910	2,132	1,921	NA	1,083	1,189
		FL	390	410	410	NA	350	350
NBAA Range	VFR	nm	3,550	NA	2,514**	1,444*	1,802	1,847*
		Avg. Spd.	421	NA	415**	316*	318	322*
		SR	0.23	NA	410**	0.42*	0.43	0.42*
	IFR	nm	3,400	2,182**	3,447	NA	1,378	NA
		Avg. Spd.	421	414**	418	NA	318	NA
		SR	0.23	0.21**	0.22	NA	0.4	NA
Certification Basis			FAR 25, 1977	FAR 25, 1980/83/87	FAR 25, 1980/87	FAR 25, 1971/71	FAR 25, 1971/78	FAR 25, 1978/84
Remarks			*Long range.	*Long range. **Max payload.	*Long range. **Max payload.	*Tanks full.	TR included in price.	*Four passengers. TR included.

Model			Cessna Citation III CE-650	Cessna Citation V CE-560	Cessna Citation VII CE-650	Dassault Falcon 10 DA My-10	Dassault Falcon 100 DA-100	Dassault Falcon 20 DA MY-20F
Serial Number			s.n. 193, 195-199, 203-206	s.n. 205-245	s.n. 7110-7119	s.n. 127, 141,149-159	s.n. 215, 218, 222, 223, 225	s.n. 468, 469
Prices	*BCA* Equiped		$8,050,375 ('91)	$5,133,000 ('93)	$11,414,00 ('00)	$3,200,000 ('80)	$4,100,000 ('89)	$6,188,790 ('84)
	Vref 2012		$1,900,000	$1,450,000	$3,700,000	$525,000	$950,000	$800,000
Configuration	Engines		2 Hon TFE731-3B-100	2 P&WC JT15D-5A	2 TFE731-4R-2S	2 Hon TFE731-2-1C	2 Hon TFE731312-1C	2 GE CF700-2D2
	Power		3,650 lb. ea.	2,000 lb. ea.	4,080 lb. ea.	3,230 lb. ea.	3,230 lb. ea.	4,500 lb. ea.
	TBO		OC	3,000	4,200	OC	OC	3,000
	Seating		2+7/9	2+7/9	2+8/13	2+7/9	2+6/9	2+9/10
Weighs (lb)	Max Ramp		22,200	16,100	23,200	18,740	18,740	28,660
	BOW		13,900	9,674	14,250	11,200	12,013	17,613
	Useful		13,900	6,426	8,950	7,540	6,727	11,047
	Max Fuel		8,300	5,771	7,330	5,910	5,912	9,170
Limits	M_{MO}		0.84	0.75	0.83	0.86	0.87	0.87
	V_{MO}		330	290	275	370	367	387
	V_{FE} (App.)		207	199	NA	NA	202	191
	PSI		9.3	8.9	9.3	8.8	8.8	8.3
Cruise	Recom.	TAS	422	350*	417*	454	431	410
		FF	1,053	740*	1,142*	1,170	1,080	1,685
		FL	450	450*	430*	410	410	390
	High Speed	TAS	468	425	459	NA	NA	NA
		FF	1,506	1,440	1,423	NA	NA	NA
		FL	390	350	410	NA	NA	NA
NBAA Range	VFR	nm	NA	832**	1,321**	1,948	1,965	1,785*
		Avg. Spd.	NA	357**	433**	415	409	374*
		SR	NA	0.31**	0.278**	0.36	NA	0.21*
	IFR	nm	1,446	1,720	NA	1,530	1,584	NA
		Avg. Spd.	346	378	NA	401	406	NA
		SR	0.37	0.36	NA	0.34	NA	NA
Certification Basis			FAR 25, 1978/82	FAR 25, 1971/89	FAR 25, 1982/91	FAR 25, 1965	FAR 25, 1969/73	CAR 4b, 1970
Remarks			APU and TR included.	*Long range. **Max payload.	*Long range. **Max payload.			*Seats full.

JETS

Model			Dassault Falcon 200 DA-200	Dassault Falcon 50 DA-50	Dassault Falcon 900 DA-900	Bombardier Learjet LR-25D	Bombardier Learjet LR-25G	Bombardier Learjet LR-35A
Serial Number			s.n. 509, 510, 512, 513	s.n. 241, 243, 247-250	s.n. 62, 66, 71,72, 75, 78-88, 92	s.n. 369, 373	s.n. 370, 371	s.n. 673-676
Prices	*BCA* Equiped		$8,000,000 ('88)	$14,750,000 ('95)	$20,850,000 ('90)	$2,375,000 ('86)	$2,625,000 ('86)	$5,495,000 ('95)
	Vref 2012		$1,000,000	$4,100,000	$850,000	$470,000	$490,000	$1,700,000
Configuration	Engines		2 Hon ATF-6A-4C	3 Hon TFE731-3-1C	2 Hon TFE731-5AR	2 GE CJ610-8A	2 GE CJ610-8A	2 Hon TFE731-2-2B
	Power		5,200 lb. ea.	3,700 lb. ea.	4,500 lb. ea.	2,900 lb. ea.	2,950 lb. ea.	3,500 lb. ea.
	TBO		OC	OC	OC	5,000	5,000	OC
	Seating		2+8/10	2+9/19	2+8/10	2+7/10	2+7/10	2 + 6/10
Weighs (lb)	Max Ramp		32,000	38,800	45,500	15,500	16,800	18,500
	BOW		18,512	21,900	24,683	8,591	8,816	10,519
	Useful		10,684	16,900	20,817	6,909	7,984	7,981
	Max Fuel		3,988	15,520	19,165	6,594	6,594	6,198
Limits	M_{MO}		0.86	0.86	0.87	0.81	0.81	0.81
	V_{MO}		376	370	370	350	350	350
	V_{FE} (App.)		209	175	180	200	200	185
	PSI		8.3	9.5	9.3	9.4	9.4	9.4
Cruise	Recom.	TAS	429	410*	428*	437	437	424*
		FF	1,484	1,474*	1,707*	1,459	1,230	990*
		FL	410	430*	430*	410	410	490*
	High Speed	TAS	460	468	480	448	465	451
		FF	1,914	2,298	2,628	1,571	1,600	1,210
		FL	370	370	370	410	410	410
NBAA Range	VFR	nm	2,633*	3,068**	NA	1,437	1,799	1,330**
		Avg. Spd.	408*	405**	NA	411	422	403**
		SR	0.26*	0.22**	NA	0.28	0.31	0.35**
	IFR	nm	NA	NA	3,263**	1,014	1,343	1,924
		Avg. Spd.	NA	NA	422**	411	415	414
		SR	NA	NA	0.21**	0.26	0.28	0.37
Certification Basis			CAR 4b, 1982	CAR 4b, 1982	FAR 25, 1979/86	FAR 25, 1966/75	FAR 25, 1966/83	FAR 25, 1966/76
Remarks			*Four passengers.	*Long range. **Max payload.	*Long range. **Max payload.			*Long range. **Max payload.

Model			Bombardier Learjet LR-55C	Bombardier Learjet 31A	Gulfstream II G-1159	Gulfstream Astra SP IA-1125SP	Gulfstream III G-1159A	Gulfstream IV G-1159C
Serial Number			s.n. 142-147	s.n. 237-242	s.n. 197-215	s.n. 75-78	s.n. 479-495	s.n. 1180-1182, 1184-1198
Prices	*BCA* Equiped		$5,950,000 ('90)	$6,604,700 ('02)	$5,900,000 ('77)	$8,752,000 ('95)	$15,000,000 ('86)	$25,000,000 ('92)
	Vref 2012		$1,800,000	$2,000,000	$625,000	$2,500,000	$2,000,000	$7,60,000
Configuration	Engines		2 Hon TFE731-3A-2B	2 Hon TFE731-2-4-3B	2 RR Spey Mk. 511-8	2 Hon TFE731-3C-200G	2 RR Spey MK511-8	2 RR Tay Mk. 661-8
	Power		3,700 lb. ea.	3,500 lb. ea.	11,400 lb. ea.	3,700 lb. ea.	11,400 lb. ea.	13,850 lb. ea.
	TBO		Prog.	4,200c	NA	OC	7,000	7,000
	Seating		2+7/10	2+6/10	2+12/19	2+8/9	2+14/19	2+14/19
Weighs (lb)	Max Ramp		21,750	17,200	66,000	23,650	70,200	73,600
	BOW		13,258	11,214	37,186	13,225	37,800	42,840
	Useful		8,492	5,986	28,814	10,425	32,400	30,760
	Max Fuel		6,690	4,124	26,800	9,365	28,300	29,280
Limits	M_{MO}		0.81	0.81	0.85	0.86	0.85	0.88
	V_{MO}		350	325	338	360	340	340
	V_{FE} (App.)		200	NA	NA	250	220	220
	PSI		9.4	9.4	9.45	8.8	9.5	9.5
Cruise	Recom.	TAS	419*	NA	430*	412*	458	459*
		FF	1,027*	NA	NA*	977*	2,935	2,713*
		FL	430*	NA	370*	450*	450	450*
	High Speed	TAS	450	456*	NA	463	488	480
		FF	1,231	1,119*	NA	1,641	4,016	3,429
		FL	430	430*	NA	350	390	410
NBAA Range	VFR	nm	NA	NA	3,400**	NA	4,119	NA
		Avg. Spd.	NA	NA	430**	NA	437	NA
		SR	NA	NA	0.14**	NA	0.15	NA
	IFR	nm	1,900**	900**	3,500**	2,010	3,728	3,685**
		Avg. Spd.	415**	406**	430**	401	437	437**
		SR	0.35**	0.376**	0.14**	410	0.15	0.16**
Certification Basis			FAR 25, 1981/88	*Long range	CAR 4b, 1967	FAR 25, 1983/85	FAR 25, 1967/79	FAR 25, 1983/87
Remarks			*Long range. **Max payload.	**Max payload.	*Long range. **Estimates.	*Long range.		*Long range. **Max payload.

JETS

Model			Gulfstream V G500	IAI Westwind I IA-1124	IAI Westwind 2 IA-1124A	Diamond 1A MU-300
Serial Number			s.n. 664-693	s.n. 429-441	s.n. 437-440	s.n. A079SA-91
Prices	*BCA* Equiped		$32,000,000 ('04)	$3,695,000 ('87)	$4,400,000 ('88)	$2,957,500 ('85)
	Vref 2012		$27,000,000	$800,000	$800,000	$450,000
Configuration	Engines		2 RR BR700-710C4-11	2 Hon TFE731-3-1G	2 Hon TFE731-3-1G	2 P&WC JT15D-4D
	Power		15,385 lb. ea.	3,700 lb. ea.	3,700 lb. ea.	2,500 lb. ea.
	TBO		OC	OC	OC	3,000
	Seating		2+16/19	2+7/10	2+7/10	2+7/9
Weighs (lb)	Max Ramp		85,500	23,000	23,650	14,700
	BOW		47,800	13,000	13,250	9,640
	Useful		37,700	10,000	10,400	5,060
	Max Fuel		34,939	8,710	9,540	4,260
Limits	M_{MO}		0.89	0.77	0.8	0.79
	V_{MO}		340	360	365	320
	V_{FE} (App.)		NA	250	250	200
	PSI		10.2	9	9	9.1
Cruise	Recom.	TAS	459*	424	424	422
		FF	2,416*	1,320	1,252	1,156
		FL	450*	410	410	350
	High Speed	TAS	488	436	436	NA
		FF	2,922	1,489	1,408	NA
		FL	430	390	390	NA
NBAA Range	VFR	nm	NA	2,350*	2,535*	1,262*
		Avg. Spd.	NA	390*	396*	377*
		SR	NA	0.30*	0.31*	0.39*
	IFR	nm	5,919**	2,550	NA	NA
		Avg. Spd.	451**	392	NA	NA
		SR	0.185**	0.31	NA	NA
Certification Basis			FAR 25, 2002	CAR 4b/FAR 25,1964/80	CAR 4b/FAR 25,1964/80	FAR 25, 1981
Remarks			*Long range.	*With exec. payload.	*Executive payload.	*Seats full.

Model			Hawker Beechcraft Hawker 700	Hawker Beechcraft Hawker 800A	Raytheon Hawker 1000A	Sabreliner 65 NA-265-65
Serial Number			s.n. 257203, 207-215	s.n. 258245, 51,-54,-58,-60-62,-66-76	s.n. 259048-050	s.n. 465-50-465-76
Prices	*BCA* Equiped		$5,995,000 ('84)	$9,950,000 ('95)	$12,955,000 ('96)	$5,100,000 ('81)
	Vref 2012		$950,000	$2,100,000	$3,500,000	$650,000
Configuration	Engines		2 Hon TFE731-3R-1H	2 Hon TFE731-5R-1H	2 P&WC PW305B	2 Hon TFE731-3R-1D
	Power		3,700 lb. ea.	4,300 lb. ea.	5,225 lb. ea.	3,700 lb. ea.
	TBO		OC	OC	2,500	NA
	Seating		2+8/14	2+8/9	2+8/9	2+8/8
Weighs (lb)	Max Ramp		25,000	27,520	31,000	24,000
	BOW		14,100	16,000	18,000	14,100
	Useful		10,900	11,520	13,100	9,900
	Max Fuel		9,450	10,000	11,440	8,684
Limits	M_{MO}		0.78	0.8	0.8	0.83
	V_{MO}		320	335	335	350
	V_{FE} (App.)		220	220	220	NA
	PSI		8.4	8.6	8.6	8.8
Cruise	Recom.	TAS	424	401*	400*	441*
		FF	1,600	1,205*	1,156*	1,223*
		FL	350	410*	410*	410*
	High Speed	TAS	NA	442	390	420
		FF	NA	1,651	2,708	1,137
		FL	NA	370	430	430
NBAA Range	VFR	nm	2,540	2,219**	NA	2,734
		Avg. Spd.	381	391**	NA	407
		SR	0.28*	410**	NA	0.34
	IFR	nm	NA	NA	2,708**	2,407
		Avg. Spd.	NA	NA	390**	407
		SR	NA	NA	430**	0.34
Certification Basis			CAR 4b, 1963/78	CAR 4b, 1963/78	CAR 4b/FAR 25, 1991	CAR 4b, 1958
Remarks			*Seats full.	*Long range. **Max payload.	*Long range. **Max payload.	*Long range.

Bombardier Learjet 85

Aircraft in Development

Updates on some of the more active development programs among business aircraft

BCA Staff Report

Bombardier Global 7000 and 8000

Bombardier reports steady progress on both its Global 7000 and 8000 business jets with them on target for service entry in 2016 and 2017, respectively. Wind tunnel testing has been completed and the joint definition phase for the two top-of-the-line models is beginning now. A major expansion of the Global completions and customer interface facility in Montreal should be completed later this year and the top tier suppliers have all been selected.

Backlogs for the $68.9 million Global 7000 and the $66.3 million Global 8000 are "very healthy," according to the company, and extend out 36 months for the entire Global family, "which is beyond our target range."

The Global 7000 is the larger of the two models under development, with a 110.6 ft. length overall, and a cabin stretching nearly 60 ft. from cockpit divider to the rear pressure bulkhead, and providing a four-zone living area. It is designed to cruise 7,300 nm at Mach 0.85 with ten passengers. By contrast, the 101.6 ft.-long 8000 has a cabin measuring 50.6 ft. long and can carry eight passengers 7,900 nm at the same cruise speed.

Both models will be powered by two GE Passport turbofan engines, now under development; the powerplant is rated at 16,500 lb. thrust. The aircraft will also feature Bombardier's new Vision Flight Deck, which will include an LCD head-up display, enhanced and synthetic vision systems, electronic flight bags, and RNP 0.1 capability, and any other advances that become available.

Bombardier Learjet 85

Meanwhile, Bombardier's Learjet 85 — the largest aircraft to bear that famous marque, and the first constructed of composites rather than aluminum — should begin flight testing this year.

Fabrication of the first aircraft is well underway with the company's Belfast division having shipped wing spars and skins to Bombardier's new manufacturing plant in Querétaro, Mexico, dedicated to the model. Final assembly, flight testing and customer delivery of the aircraft will take place at the company's Wichita, Kan., facility, which has undergone a major expansion to accommodate the new model.

The Learjet 85's cabin will be a hair shy of 6 ft. tall, a hair wider than that and stretch for nearly 25 ft. from the cockpit divider to the rear pressure bulkhead. Its target, four-passenger range is 3,000 nm

and long-range cruise is Mach 0.78. The aircraft will feature a Rockwell Collins Pro Line Fusion avionics suite, with three 15.1 in Active Matrix Liquid Crystal Displays and will be powered by Pratt & Whitney Canada PW 307B turbofans, each rated at 6,100 lb. thrust.

The $19.6 million aircraft is on schedule for service entry in 2013.

AgustaWestland AW609

Now in sole control of the civil tiltrotor program it had begun with Bell Helicopter Textron, AgustaWestland plans to begin certification flights of its renamed AW609 next year with the goal of obtaining FAA certification and begin deliveries by mid-2016. The company reports cash-backed orders in hand for some 70 units from 40 costumers in 15 countries. Two prototypes have been involved in initial flight tests. A third aircraft is being assembled in AgustaWestland Italian plants and will fly next year and it is to be followed by a fourth one in 2014.

The first AW609 prototype is in Arlington, Tex., and the second is in Italy. The two aircraft have already logged over 650 flying hours and have opened up 85% of the flight envelope.

The pace of the program began accelerating once AgustaWestland acquired Bell's stake last year. This has allowed a streamlining of the program, processes and financial aspects, reducing costs. AgustaWestland has established AgustaWestland Tiltrotor Co. in Arlington and is expanding its facilities and adding personnel, and expects the payroll to reach 150. Another 250 work on the program in Cascina Costa, Italy.

The original aircraft is being improved, starting with a new glass cockpit and a new satellite based navigation system. The company has not yet announced if production will occur in Texas as well as in Italy.

Bruno Spagnolini, AgustaWestland CEO, says the company's market forecast for the AW609 is set at 450-500 aircraft in 20 years. The aircraft's book price has not yet been announced but is expected to be no more than 50% higher than an unpressurized helicopter of the same weight class.

Cessna Citation Latitude

The Latitude will be the first business jet from Cessna in three decades to have a larger fuselage cross-section than the Citation III. Development of Cessna's first super-midsize jet now is well underway. Projected range has been increased from 2,000-2,300 nm to make it more competitive with archrival Embraer Legacy 450. Top speed will be 442 KTAS. To verify the Latitude's range and cruise speed performance, two rounds of high-speed wind tunnel tests have been completed. Based upon Sovereign wing performance, average cruise speed should be close to Mach 0.72 , *BCA* estimates.

AgustaWestland AW609

Retaining the wing aerodynamics of the Citation Sovereign, though, assures a 3,900 ft. TOFL, the best runway performance of any aircraft in its class. It also should be able to climb directly to FL 430 in 23 min. Most systems will be similar to the Sovereign's and the new model will be added as a derivative model on the Sovereign's type certificate. However, it will be updated with Garmin G5000 avionics with touch-screen control panels.

With full fuel, the aircraft should be able to carry five passengers. The standard interior will have a two-place side-facing divan on the right side of the forward cabin, four club seats in the center cabin and two forward-facing chairs in the aft cabin. An additional seat, opposite the toilet in the lavatory, will be optional.

The aircraft will have a flat floor, large cabin windows, Cessna's new high reliability Clairity cabin management system and the lowest price tag of any super-midsize jet. A light empty weight should also give it the lowest operating costs in its class.

The first metal for the aircraft will be cut in 2014. First flight is scheduled for mid-2014. Certification and entry into service are slated for 2015.

Cessna Citation Latitute

Cirrus Vision SF50

Cirrus Vision SF50

In mid April, Cirrus Aircraft announced that its new owner, China Aviation Industry General Aircraft, had committed an additional $100 million-plus to fund full development of the single-turbofan Vision SF50 personal jet. First flight of a production-conforming version now is planned for mid-2013 with certification and initial customer deliveries slated for second half 2015, according to Todd Simmons, executive vice president of Cirrus sales and marketing. The aircraft is designed to serve an easy step up from the manufacturer's SR20/22 piston-engine models to the entry-level turbofan aircraft.

Vision's commodious cabin will provide seating for five adults and two children. Top speed is expected to be around 300 KTAS and max range is targeted at close to 1,000 nm. However, the aircraft will be limited to a 500 lb. payload with max fuel, and thus there will be significant range versus payload tradeoffs. Slow speed performance should be a strong suit, providing easy handling in the landing configuration and short runway requirements.

Cirrus already has spent $40-50 million on development and flight testing of a non-conforming proof-of-concept single-engine turbofan aircraft. Simmons claims that a "substantial majority" of the basic engineering work for a production aircraft has been accomplished, including expansion of the low- and high-speed boundaries of the flight envelope, stall characteristics, taming thrust/pitch coupling of the top-mounted engine on the tail cone and performance in icing conditions. Notably, production versions of the Vision will use a TKS deice system on the nose to protect the engine from airframe ice ingestion. The engine inlet will use bleed air for anti-icing and conventional deice boots will be fitted to the wings and empennage.

Company critics have asserted that the Duluth, Minn., OEM now has the funding for the Vision, but not the engineering talent to push through a production aircraft to certification. Simmons countered that the firm still has a strong core and depth on its engineering team, including Chief Engineer Paul Johnston, Aero Structures Lead Paul Brey, Executive Vice President and COO Pat Waddick and Chief Vision Engineer Dave Rathbun.

Embraer Legacy 500

Serial number 500-00001, the first Legacy 500, rolled out of final assembly in December 2011 at Embraer's Sao Jose dos Campos headquarters plant. The first Honeywell HTF7500E engine runs were completed in January 2012 and taxi tests began in March. The Legacy 500 will be the first super-midsize business aircraft to feature digital fly-by-wire (FBW) flight controls. The Brazilian manufacturer is embracing FBW to ease pilot workload, improve passenger comfort, reduce airframe structural weight and streamline the certification process.

Virtually all required high-speed taxi tests have been completed, but the Legacy 500 won't become airborne until airworthiness approvals for its FBW remote electronic units (REU) are obtained. The REUs are devices that send control signals to the FBW electrohydraulic flight control actuators and they are supplied by Parker Aerospace's Irvine, Calif., facility.

Last year, an on-site audit by Embraer unveiled what it determined were anomalies in Parker's software validation and verification documentation processes that were show stoppers. The Brazilian OEM subsequently stationed its own supervisors at the Parker plant to assure that future software releases for the REUs would meet all Brazilian, FAA and EASA airworthiness requirements.

First flight of s.n. 00001 now is slated for third quarter 2012. The aircraft will be used primarily for flight envelope expansion and performance testing during the development program.

The wing and fuselage of the second flight test aircraft was completed in March 2012 and that aircraft now has undergone electrical power checks. Serial number 00002 will be used for avionics

Embraer Legacy 450

testing, among other tasks. Mating of the fuselage sections of the third flight test aircraft also began in March. Serial number 00003 will be used to evaluate the interior furnishings and to complete function and reliability testing.

Type certification and initial customer deliveries of the 3,000-nm range Legacy 500 are slated for fourth quarter 2014 or first quarter 2015.

Embraer Legacy 450

The joint definition phase for the Legacy 450, a shorter fuselage and shorter range variant of the Legacy 500, continues apace. The 2,300-nm midsize aircraft will have 95% commonality with Legacy 500, sharing its engines, wings, avionics and most systems.

The Legacy 450 has the largest cross-section, most cabin volume and lowest cabin altitude in the midsize class, plus it's the only aircraft in the segment to have FBW flight controls and standard auto-throttles, plus an optional head-up display, optional auto-brakes and a vacuum lav system. It also has the largest windows and a completely flat floor.

The cabin has one less row of seats than the Legacy 500, but there's plenty of room for a center four-seat club section with two forward-facing chairs in the rear of the cabin. The forward section of the cabin has a single aft-facing chair on the right side. A forward, right-side wet galley or two-place divan are available. Options for the galley include microwave and convection ovens, a refrigerator, coffee maker and Nespresso machine.

The aircraft also may be fitted with an optional forward left side fold-down flight attendant's seat. A belted potty seat, certified for full time occupancy, also is available, thus allowing the aircraft to accommodate as many as nine passengers, if necessary.

Both the Legacy 450 and 500 have 40 cu. ft. aft internal luggage compartments plus 110 cu. ft. aft external baggage compartments, the most of any aircraft in their segments.

First flight is scheduled for second half 2013 with type certification and entry into service expected in second half 2014.

Kestrel

Alan Klapmeier, company founder, chairman and CEO of Kestrel Aircraft Co., is "quite confident" that his eight-place Kestrel single-engine turboprop will raise the bar for cabin comfort, payload, range, speed and docile handling characteristics in this class of business aircraft. The Kestrel is a major rework of the 2002 Farnborough Aircraft F1 design, incorporating a 1,000 shp Honeywell TPE331-14GR turboprop in place of the F1's PWC PT6A-67A, along with a wider and longer cabin, larger windows, redesigned flight controls to reduce effort and straight leading edges for the wings.

Production conforming aircraft definition is proceeding on track, he said, with external aerodynamic loft contours now well defined, initial composite materials qualifications underway and freezing nearly half of the systems designs. Klapmeier has been talking with all major avionics suppliers and that includes Honeywell regarding its latest version of Apex. Kestrel is evaluating an electro-expulsive ice production system that would replace deice boots on wing and empennage leading edges.

The aircraft cabin will have a flat floor, except for a 2-in. drop in the cockpit floor. The wing spar carry-through structure will not intrude into the cabin. A variety of cabin configurations will be offered, including high-density seating, an executive interior and a combination passenger/freight version.

Klapmeier has assembled an impressive engineering team, attracting many colleagues with whom he worked at Cirrus Design, the firm he cofounded with his brother. He declined to disclose a certification schedule for the aircraft or specific performance numbers. But the Kestrel will be positioned in a niche between the $3.4 million TBM850 and $4.6 million Pilatus PC12NG, but priced significantly lower. It's likely that Kestrel will be able to cruise faster than 300 KTAS, fly at least 1,500 nm and routinely operate out of 3,000-ft. runways.

Diamond Jet

Progress on the Diamond Jet continues at a deliberate pace, even though funding is lean for the research and development, says Peter Maurer, president and CEO of Diamond Aircraft. However, using the third proof-of-concept aircraft, along with static test articles and iron bird mock-ups, several critical challenges have been overcome.

"The program now is well defined and it is proceeding well. There are no technical risks," Maurer says. Elevator horn size has been adjusted to fine-tune control forces. The effectiveness of the anti-ice system for both the engine air inlets and bifurcated ducts has been proven. Upswept tips have been added to the wings to reduce stall speed. About 95% of the structural design has been completed. The fuselage pressure vessel

Kestrel

and all transparencies have been tested to 20,000 pressurization cycles. The static test article now is starting 40,000 and 60,000 pressurization cycle fatigue life tests.

"We've nailed the flight control design, structure, engine inlet, bleed air and anti-ice system, along with the aero contours." Final design of the chined-nose tire, development of the environmental control system and calibration of the stall prevention stick pusher are in progress.

Powered by a single Williams International FJ33-5A turbofan, the D-Jet should have a 500-lb. tanks-full payload, cruise as fast as 315 KTAS at FL 250 and fly at least 1,100 nm at its 240 KTAS long-range cruise speed and land with NBAA IFR reserves. It will have two seats in the cockpit and three seats in the main cabin.

Diamond now is building tooling for the fourth D-Jet, a fully production conforming aircraft that will be used for the certification program. New molds are being constructed to accommodate leading-edge recesses for flush-mounted deice boots that will be used instead of the TKS deice system that was part of the original proof-of-concept design.

Maurer admits that the aircraft has grown in weight, but an aggressive weight management program will enable Diamond to maintain a 5,690-lb. max ramp weight and 5,650-lb. MTOW in production aircraft. That provides a 350-lb. margin up to the 6,000-lb. weight limit for this class of EASA/FAR Part 23 aircraft. The production conforming D-Jet's first flight could be as soon as second quarter 2013. Three production conforming aircraft will be used in the development program with the goal of achieving type certification and customer deliveries in the second half of 2014.

But, all this is contingent upon Diamond Aircraft's obtaining full funding for the development program. That could be a $50-100 million challenge. **BCA**

NON-PRESSURIZED TURBOPROPS

Manufacturer			Cessna	Cessna	Cessna
Model			Caravan 675 CE-208	Grand Caravan CE-208B	Grand Caravan CE-208B*
BCA Equiped Price			$2,132,000	$2,299,000	$2,307,000
Characteristics		Seating	1+9/9	1+9/9	1+13/13
		Seat Pitch (in.)	32.0	35.0	35.0
		Wing Configuration	hi	hi	hi
		Noise	79.0	82.7	82.7
External Dimensions (ft.)		Length	37.6	41.6	41.6
		Height	14.9	15.5	15.5
		Span	52.1	52.1	52.1
		Turn Radius	67.3	67.3	67.3
Internal Dimensions (ft.)		Length	12.7	16.7	16.7
		Height	4.5	4.5	4.5
		Width	5.3	5.3	5.3
		Baggage Volume per Passenger	3.5	15.9	8.6
Power		Engines	1 P&WC PT6A-114A	1 P&WC PT6A-114A	1 P&WC PT6A-114A
		Output/Flat Rating	675/ISA+27C	675/ISA+27C	675/ISA+27C
		Pressurization	—	—	—
Weights (lb.)		Max Ramp	8,035	8,785	8,785
		Max TO	8,000	8,750	8,750
		Max Landing	7,800	8,500	8,500
		Zero Fuel	7,800	8,500	8,500
		OEW	4,940	5,440	5,530
		Max Payload	2,860	3,060	2,970
		Max Fuel	2,224	2,224	2,224
		Payload – Max Fuel	871	1,121	1,031
		Fuel – Max Payload	235	285	285
Takeoff		A/S SL ISA	2,055	2,500	2,500
		5,000 ft. + 20C	2,973	3,735	3,735
		V_{MCA}	—	—	—
		V_{XSE} (FAR 23) or V_2 (FAR 25)	90	68	68
Climb	Rate (fpm)	All Eng.	1,234	925	925
		Eng. Out	—	—	—
	Ceiling	All Eng.	25,000	22,800	22,800
		Eng. Out	—	—	—
Limits		V_{MO}	175	175	175
		V_A	150	148	148
		V_{FE}	175	175	175
		V_{LO}	—	—	—
Cruise		TAS	186	172	172
		FF	379	379	379
		FL	FL 100	FL 100	FL 100
BCA Productivity Factors	75-sm Mission	Stage/Fuel	6	6	2
		No. Pass.	9	9	13
		Total Trips	17	16	16
		Total Fuel	2,958	2,992	3,072
		Engine Hours	8.20	8.00	8.30
		Seat Hours	11,475	10,800	15,600
		sm/hr.	1,399	1,350	1,880
		sm/lb.	3.88	3.61	5.08
		Block Speed	188	180	173
		Mission Fuel	174	187	192
		FL	FL 080	FL 080	FL 080
	150-sm Mission	Stage/Fuel	3	4	1
		No. Pass.	9	9	13
		Total Trips	11	11	11
		Total Fuel	3,344	3,608	3,674
		Engine Hours	9.35	9.90	9.90
		Seat Hours	14,850	14,850	21,450
		sm/hr.	1,588	1,500	2,167
		sm/lb.	4.44	4.12	5.84
		Block Speed	196	184	184
		Mission Fuel	304	328	334
		FL	FL 100	FL 100	FL 100
	275-sm Mission	Stage/Fuel	2	2	1
		No. Pass.	9	9	13
		Total Trips	7	7	7
		Total Fuel	3,682	3,983	4,018
		Engine Hours	10.00	10.70	10.70
		Seat Hours	17,325	17,325	25,025
		sm/hr.	1,733	1,619	2,339
		sm/lb.	4.71	4.35	6.23
		Block Speed	204	190	190
		Mission Fuel	526	569	574
		FL	FL 100	FL 100	FL 100
Certification Basis			FAR 25 A 54, 1995 Utility category	FAR 25 A 54, 1995 Utility category	FAR 25 A 54, 1997 Utility category
Remarks			Garmin G1000.	Garmin G1000; belly cargo pod.	*Non-FAR/EASA seating config.; Garmin G1000; belly cargo pod.

PRESSURIZED TURBOPROPS

Manufacturer			*Avions de Transport Regional*	Avions de Transport Regional	Bombardier
Model			*ATR 42-600* *ATR-42-500*	ATR 72-600 ATR 72-212A	Dash8-Q400 DHC-8-400
BCA Equiped Price			*$19,500,000*	$23,400,000	$30,340,000
Character-istics		Seating	*3+48/50*	4+68/74	4+74/78
		Seat Pitch (in.)	*30.0*	31.0	31.0
		Wing Configuration	*hi*	hi	hi
		Noise (EPNdB): TO/Sideline/APR	*76.6/80.7/92.4*	76.6/80.7/92.4	78.3/84.0/94.3
External Dimensions (ft.)		Length	*74.4*	89.0	107.7
		Height	*25.0*	25.0	27.4
		Span	*80.6*	89.0	93.3
		Turn Radius	*56.0*	63.0	84.4
Internal Dimensions (ft.)		Length	*48.3*	63.0	61.7
		Height	*6.3*	6.3	6.4
		Width	*8.4*	8.4	8.2
		Baggage Volume per Passenger	*9.0*	7.8	10.7
Power		Engines	*2 P&WC PW-127M*	2 P&WC PW-127M	2 P&WC PW-150A
		Output (shp ea.)/Flat Rating	*2,400/ISA+24C*	2,750/ISA+24C	5,071/ISA+22C
		Pressurization	*6.0*	6.0	5.5
Weights (lb.)		Max Ramp	*41,380*	51,081	65,400
		Max TO	*41,005*	50,706	65,200
		Max Landing	*40,344*	48,170	62,000
		Zero Fuel	*36,817*	46,297	58,000
		OEW	*24,692*	29,763	39,192
		Max Payload	*12,125*	16,534	18,808
		Max Fuel	*10,031*	11,133	11,724
		Payload – Max Fuel	*6,657*	10,185	14,484
		Fuel – Max Payload	*4,563*	4,784	7,400
Takeoff		BFL SL ISA	*4,300*	NA	4,819
		5,000 ft. + 20C	*5,800*	NA	7,495
		Min.: WAT Ltd. Weight or MTOW	*41,005*	46,395	64,500
		V_{MCA}	*99*	98	91
		V_{XSE} (FAR 23) or V_2 (FAR 25)	*137*	138	120
Climb	Rate (fpm)	All Eng.	*1,900*	1,600	1,790
		Eng. Out	*480*	400	720
	Ceiling	All Eng.	*25,000*	25,000	25,000
		Eng. Out	*16,000*	14,300	17,500
Limits		V_{MO}	*250/0.55*	250/0.55	286/NA
		V_A	*160*	175	204
		V_{FE}	*180*	185	200
		V_{LO}	*170*	170	200
Cruise		TAS	*300*	276	360
		FF	*1,397*	1,242	2,286
		FL	*250*	250	250
BCA Productivity Factors	150-sm Mission	Stage/Fuel	*5*	5	6
		No. Pass.	*48*	68	74
		Total Trips	*13*	13	14
		Total Fuel	*11,479*	12,194	18,536
		Engine Hours	*8.53*	10.88	8.49
		Seat Miles	*93,600*	132,600	155,400
		sm/hr.	*10,973*	12,188	18,304
		sm/lb.	*8.15*	10.87	8.38
		Block Speed	*198*	190	214
		Mission Fuel	*883*	938	1,324
		FL	*250*	250	160
	275-sm Mission	Stage/Fuel	*3*	3	4
		No. Pass.	*48*	68	74
		Total Trips	*9*	9	11
		Total Fuel	*12,456*	13,311	24,376
		Engine Hours	*9.21*	9.73	10.20
		Seat Miles	*118,800*	168,300	223,850
		sm/hr.	*12,899*	17,297	21,946
		sm/lb.	*9.54*	12.64	9.18
		Block Speed	*234*	221	300
		Mission Fuel	*1,384*	1,479	2,216
		FL	*250*	250	210
	400-sm Mission	Stage/Fuel	*2*	3	3
		No. Pass.	*48*	68	74
		Total Trips	*7*	7	8
		Total Fuel	*13,083*	12,754	22,128
		Engine Hours	*9.92*	10.02	10.09
		Seat Miles	*134,400*	190,400	236,800
		sm/hr.	*13,548*	19,002	23,469
		sm/lb.	*10.27*	14.93	10.70
		Block Speed	*246*	243	321
		Mission Fuel	*1,869*	1,822	2,766
		FL	*250*	250	250
Certification Basis			*FAR/EASA 25 pending*	EASA 25 2007/12 with Major Chg. 10039089	FAR 25 A 83, 2000
Remarks				Optional 50,706-lb. MTOW; optional 46,297-lb. MZFW.	Model 402 — EGHW checked bags only.

JETS

Manufacturer			Embraer	Embraer	Embraer	Embraer	Bombardier	Embraer
Model			ERJ 135LR EMB-135LR	ERJ 140LR EMB-135KL	ERJ 145LR EMB-145LR	ERJ 145XR EMB-145XR	CRJ 700 CL-600-2C10	Embraer 170 AR ERJ 170-100 LR
BCA Equiped Price			$22,227,000	$25,688,000	$29,069,000	$31,390,000	$37,340,000*	$39,323,000
Characteristics		Seating	3+37/37	3+44/44	3+50/50	3+50/50	4+70/78	4+70/78
		Seat Pitch (in.)	31.0	31.0	31.0	31.0	31.0	30.0
		Wing Configuration	lo	lo	lo	lo	lo	lo
		Noise (EPNdB): TO/Sideline/APR	79.7/84.5/92.3	80.6/84.4/92.4	81.0/84.9/92.5	81.2/86.9/91.6	82.7/89.4/92.6	85.3/92.2/94.9
External Dimensions (ft.)		Length	86.4	93.4	98.0	98.0	106.1	98.1
		Height	22.2	22.2	22.2	22.2	24.8	32.3
		Span	65.9	65.9	65.9	68.9	76.3	85.4
		Turn Radius	60.1	65.8	69.7	69.7	61.5	55.1
Internal Dimensions (ft.)		Length	42.5	49.4	54.1	54.1	56.7	63.8
		Height	6.0	6.0	6.0	6.0	6.2	6.6
		Width	6.9	6.9	6.9	6.9	8.3	9.0
		Baggage Volume per Passenger	10.9	9.3	8.9	8.9	7.8	9.8
Power		Engines	2 RR AE 3007A1/3	2 RR AE 3007A1/3	2 RR AE 3007A1P	2 RR AE 3007A1E	2 GE CF34-8C5B1	2 GE CF34-8E
		Output (lb. ea.)/Flat Rating	7,426/ISA+30C	7,426/ISA+30C	7,426/ISA+30C	8,736/ISA+22C	13,790/ISA+15C	14,200/ISA+15C
		Pressurization	7.8	7.8	7.8	7.8	8.3	8.4
Weights (lb.)		Max Ramp	44,312	46,738	48,722	53,351	73,000	85,451
		Max TO	44,092	46,517	48,501	53,131	72,750	85,098
		Max Landing	40,785	41,226	42,549	44,092	67,000	73,414
		Zero Fuel	35,274	37,698	39,462	40,785	62,300	68,123
		OEW	25,355	26,032	26,707	27,758	44,245	46,572
		Max Payload	9,919	11,666	12,755	13,027	18,055	21,551
		Max Fuel	11,435	11,435	11,435	13,298	19,450	20,785
		Payload – Max Fuel	7,522	9,271	10,580	12,295	9,305	18,094
		Fuel – Max Payload	9,038	9,040	9,260	12,566	10,700	17,328
Takeoff		BFL SL ISA	5,774	6,070	7,448	6,791	5,271	5,394
		5,000 ft. + 20C	10,168	10,168	10,086	NA	8,324	10,113
		Min.: WAT Ltd. Weight or MTOW	44,092	46,516	48,501	53,131	72,750	83,459
		V_{MCA}	NA	NA	NA	NA	NA	NA
		V_{XSE} (FAR 23) or V_2 (FAR 25)	129	134	144	138	136	129
Climb	Rate (fpm)	All Eng.	2,850	2,600	2,500	4,000	2,900	3,500
		Eng. Out	NA	NA	NA	NA	1,230	NA
	Ceiling	All Eng.	37,000	37,000	37,000	37,000	41,000	41,000
		Eng. Out	NA	NA	NA	18,500	17,600	NA
Limits		V_{MO}	320/0.78	320/0.78	320/0.78	320/0.80	335/0.85	320/0.82
		V_A	200	200	200	200	246	258
		V_{FE}	250	250	250	250	230	230
		V_{LO}	250	250	250	250	220	250
Cruise		TAS	362	369	376	367	464	415
		FF	1,673	1,757	1,834	1,731	2,900	2,906
		FL	FL 350	FL 350	FL 350	FL 350	FL 370	FL 370
BCA Productivity Factors	275-sm Mission	Stage/Fuel	2	2	2	2	5	3
		No. Pass.	37	44	50	50	70	70
		Total Trips	11	11	11	11	12	11
		Total Fuel	22,187	23,067	24,640	25,124	28,440	31,867
		Engine Hours	10.63	10.63	10.63	10.63	9.44	10.27
		Seat Miles	111,925	133,100	151,250	151,250	231,000	211,750
		sm/hr.	10,529	12,521	14,229	14,229	24,470	20,618
		sm/lb.	5.04	5.77	6.14	6.02	8.12	6.64
		Block Speed	445	439	450	450	350	435
		Mission Fuel	2,017	2,097	2,240	2,284	2,370	2,897
		FL	FL 310	FL 290	FL 280	FL 290	FL 310	FL 340
	400-sm Mission	Stage/Fuel	2	2	2	2	3	3
		No. Pass.	37	44	50	50	70	70
		Total Trips	9	9	9	9	11	9
		Total Fuel	22,401	23,112	24,363	24,561	33,099	33,138
		Engine Hours	10.95	11.10	11.10	11.10	9.63	10.80
		Seat Miles	133,200	158,400	180,000	180,000	308,000	252,000
		sm/hr.	12,164	14,270	16,216	16,216	31,983	23,333
		sm/lb.	5.95	6.85	7.39	7.33	9.31	7.60
		Block Speed	435	435	435	435	457	429
		Mission Fuel	2,489	2,568	2,707	2,729	3,009	3,682
		FL	FL 370	FL 370	FL 370	FL 370	FL 390	FL 380
	800-sm Mission	Stage/Fuel	1	1	1	1	2	2
		No. Pass.	37	44	50	50	70	70
		Total Trips	6	6	6	6	6	6
		Total Fuel	25,518	26,298	27,396	27,300	31,866	37,368
		Engine Hours	12.20	12.20	12.20	12.20	9.93	12.10
		Seat Miles	177,600	211,200	240,000	240,000	336,000	336,000
		sm/hr.	14,557	17,311	19,672	19,672	33,837	27,769
		sm/lb.	6.96	8.03	8.76	8.79	10.54	8.99
		Block Speed	435	435	435	435	483	429
		Mission Fuel	4,253	4,383	4,566	4,550	5,311	6,228
		FL	FL 370	FL 370	FL 370	FL 370	FL 390	FL 380
Certification Basis			CTA/FAR/JAR 25, 1999	CTA/FAR/JAR 25, 2001	CTA/FAR/JAR 25, 1997	CTA/FAR/JAR 25, 2002	FAR/JAR 25, 2001	CTA/FAR/JAR 25, 2004
Remarks							*BCA* estimated price CRJ 700 ER and LR checked bags only.	

JETS

Manufacturer			Embraer	Embraer	Bombardier	Embraer	Bombardier
Model			Embraer 190 AR ERJ 190-100 IGW	Embraer 175 AR ERJ 170-200 LR	CRJ 900 CL-600-2D24	Embraer 195 AR ERJ 190-200 IGW	CRJ 1000 CL-600-2E25
BCA Equiped Price			$41,307,000	$42,264,000	$42,840,000*	$43,601,000	$45,760,000*
Characteristics		Seating	4+98/114	4+78/88	4+88/90	5+108/118	5+100/104
		Seat Pitch (in.)	32.0 to 33.0	29.0	31.0	32.0 to 33.0	31.0
		Wing Configuration	lo	lo	lo	lo	lo
		Noise (EPNdB): TO/Sideline/APR	84.3/91.9/92.4	85.9/91.9/95.0	83.9/89.2/92.3	85.4/91.8/92.8	85.5/89.8/93.4
External Dimensions (ft.)		Length	118.9	103.1	119.3	126.8	128.4
		Height	34.6	31.1	24.6	34.5	24.8
		Span	94.2	85.4	81.7	94.2	85.9
		Turn Radius	70.5	59.8	65.1	74.3	92.0
Internal Dimensions (ft.)		Length	84.5	69.6	69.3	92.4	77.5
		Height	6.6	6.6	6.2	6.6	6.2
		Width	9.0	9.0	8.3	9.0	8.3
		Baggage Volume per Passenger	10.1	10.2	6.7	10.4	6.9
Power		Engines	2 GE CF34-10E	2 GE CF34-8E	2 GE CF34-8C5	2 GE CF34-10E	2 GE CF34-8C5A1
		Output (lb. ea.)/Flat Rating	20,000/ISA+15C	14,200/ISA+15C	14,510/ISA+15C	20,000/ISA+15C	14,510/ISA+15C
		Pressurization	8.4	8.4	8.3	8.4	8.3
Weights (lb.)		Max Ramp	114,552	89,353	80,750	115,632	90,500
		Max TO	114,199	89,001	80,500	115,279	90,000
		Max Landing	97,003	75,178	73,500	100,971	81,500
		Zero Fuel	90,169	70,548	70,000	93,916	77,500
		OEW	61,333	47,818	48,160	63,824	51,120
		Max Payload	28,836	22,730	21,840	30,092	26,380
		Max Fuel	28,880	20,785	19,450	28,880	19,450
		Payload – Max Fuel	24,339	20,750	13,140	22,928	19,930
		Fuel – Max Payload	24,383	18,805	10,750	21,716	13,000
Takeoff		BFL SL ISA	5,583	7,362	5,929	6,033	6,549
		5,000 ft. + 20C	10,341	11,346	8,355	10,850	11,232
		Min.: WAT Ltd. Weight or MTOW	114,199	83,099	79,221	115,279	86,219
		V_{MCA}	NA	NA	NA	NA	NA
		V_{XSE} (FAR 23) or V_2 (FAR 25)	144	NA	145	149	147
Climb	Rate (fpm)	All Eng.	3,100	3,300	3,000	3,000	2,700
		Eng. Out	NA	NA	1,130	NA	900
	Ceiling	All Eng.	41,000	41,000	41,000	41,000	41,000
		Eng. Out	NA	NA	16,100	NA	14,800
Limits		V_{MO}	320/0.82	320/0.82	335/0.85	320/0.82	335/0.85
		V_A	258	258	267	258	280
		V_{FE}	230	230	230	230	230
		V_{LO}	250	250	220	250	220
Cruise		TAS	435	415	464	435	464
		FF	3,860	3,024	3,100	3,954	3,600
		FL	FL 370	FL 370	FL 370	FL 370	FL 370
BCA Productivity Factors	275-sm Mission	Stage/Fuel	3	3	4	3	5
		No. Pass.	98	78	88	108	100
		Total Trips	11	11	12	11	12
		Total Fuel	39,622	33,176	30,768	41,437	34,044
		Engine Hours	10.27	10.27	9.17	10.27	9.50
		Seat Miles	296,450	235,950	290,400	326,700	330,000
		sm/hr.	28,866	22,975	31,668	31,811	34,737
		sm/lb.	7.48	7.11	9.44	7.88	9.69
		Block Speed	457	436	349	457	347
		Mission Fuel	3,602	3,016	2,564	3,767	2,837
		FL	FL 320	FL 330	FL 310	FL 310	FL 290
	400-sm Mission	Stage/Fuel	2	2	3	2	4
		No. Pass.	98	78	88	108	100
		Total Trips	9	9	9	9	9
		Total Fuel	40,563	34,641	29,511	42,570	32,616
		Engine Hours	10.65	10.80	9.41	10.65	9.42
		Seat Miles	352,800	280,800	316,800	388,800	360,000
		sm/hr.	33,127	26,000	33,666	36,507	38,217
		sm/lb.	8.70	8.11	10.73	9.13	11.04
		Block Speed	447	430	383	447	382
		Mission Fuel	4,507	3,849	3,279	4,730	3,624
		FL	FL 390	FL 370	FL 390	FL 380	FL 370
	800-sm Mission	Stage/Fuel	2	2	2	2	2
		No. Pass.	98	78	88	108	100
		Total Trips	6	6	6	6	6
		Total Fuel	45,570	39,408	34,680	48,120	20,478
		Engine Hours	11.80	12.10	10.94	11.80	10.96
		Seat Miles	470,400	374,400	422,400	518,400	480,000
		sm/hr.	39,864	30,942	38,611	43,932	43,796
		sm/lb.	10.32	9.50	12.18	10.77	23.44
		Block Speed	447	430	439	447	438
		Mission Fuel	7,595	6,568	5,780	8,020	3,413
		FL	FL 390	FL 360	FL 390	FL 380	FL 370
Certification Basis			CTA/FAR/EASA 25, 2005	CTA/EASA/FAR 25, 2004	FAR/JAR 25, 2002 **BCA* estimated price CRJ 900 ER and LR checked bags only.	CTA/EASA 25 FAR 25, 2006	FAR 25 pending **BCA* estimated price

New Engine Update

The focus for many of the new engine developments in the business aircraft arena is increasing thrust as propulsion providers follow the market trend toward larger-cabin, longer-range aircraft developments.

By Guy Norris
guy_norris@aviationweek.com

The five-way fight over the amorphous "10K" (10,000-lb.-thrust) market that dominated the top-end of the thrust battle in the late 2000s has given way to a wider spread of engine developments over a high-thrust bracket. Pratt & Whitney Canada, for instance, is pushing aggressively into the 12,000- to 16,000-lb. thrust range with a larger PW800-based demonstrator that originally started life as a 10K contender. The development builds directly on the company's ongoing PW1000G geared turbofan family project, the PW1100G version of which also will power future Airbus ACJs.

Yet mystery still surrounds the true extent of the latest developments in this thrust sector. It is unknown, for example, which version of the geared turbofan forms the basis for the PW800 demonstrator, as P&WC keeps its cards close to its chest. Similarly, the current status of Snecma's Silvercrest remains an enigma. The engine is still officially looking for a home although it continues to be linked with the equally enigmatic Dassault SMS project. Likewise, there are more questions than answers over the future direction of Rolls-Royce's advanced business jet engine work in the wake of the apparent slowdown on the RB 282. For the immediate future, the company's focus remains on supporting the development of the BR725, which will enter service this year on Gulfstream's G650, but in the longer term Rolls will be moving to protect its valuable franchise in the higher thrust arena. General Electric is one of the companies making new inroads in this area with its Passport program, which leverages ongoing development of the CFM Leap-X family of new single-aisle engines, as well as the widebody GEnx powerplants.

New developments in the mid-thrust range include the continuing evolution of Honeywell's HTF7000 with new variants entering service and flight test this year, while the GE-Honda HF120 is expected to be the next all-new engine to complete development.

CFM Leap

CFM International's Leap is the exclusive powerplant for future Boeing Business Jet derivatives of the newly announced 737 MAX, as well as an option for the Airbus ACJ variant of the A320Neo. Based on an all-new gas generator, the Leap will succeed the CFM56 and is aimed at 15% better fuel efficiency than the current

CFM56-5B. The engine will also have 50% lower emissions against the CAEP 6 standards and will be up to 15 dB lower than Stage 4 noise limits.

Hardware is being assembled for the third eCore demonstrator, which will run at General Electric's Evendale, Ohio, site in the third quarter. By late April, CFM planned to start the first of four key endurance tests of advanced technology for Leap using a series of GEnx 747-8 and 787 ground test engines. The first test, on a GEnx-2B, will evaluate the next-generation high-pressure turbine (HP) blade with advanced cooling intended for Leap. The engine also will be fitted with a shaped multi-hole combustor liner and ceramic matrix composite (CMC) shrouds.

The next test in September, this time using a GEnx-1B, will add new combustor, HP turbine and compressor coatings. In February 2013, a third test will evaluate a full set of advanced blades, while a fourth in June 2013 will collect detailed data from a heavily instrumented engine.

Development of the Snecma-led lightweight resin transfer molded (RTM) fan and containment system is almost complete and the focus is gradually shifting to enabling the supply chain to support the coming ramp-up in production. As part of this initiative Snecma has broken ground on a new RTM blade manufacturing site in Albany, N.H.

The challenge is daunting as CFM took record orders in 2011 including 1,500 CFM56s and commitments for more than 3,050 Leap engines. Since the start of 2012, the numbers have continued to climb with a further 326 new CFM56 sales and 206 firm Leap engines logged. Production of Leap engines will gradually increase from 2015 to 2016, with the newer engine expected to form the bulk of production by 2018 to 2019.

CFM Leap

The engine family is in development for entry into service in 2016 on the A320neo and Comac C919, and in 2017 on the Boeing 737 MAX.

General Electric Passport

General Electric was on track to freeze the design of its new centerline Passport business jet engine around the end of April. Rated at 16,500 lb. of thrust, the initial Passport 20 variant is in development for Bombardier's Global 7000 and 8000 ultra-long-range, large-cabin business aircraft.

Previously called TechX, Passport is a parallel development to GE's NG34 regional jet CF34 successor program. Both leverage high-pressure compressor

General Electric Passport

and turbine technology now being developed and tested in the eCore 2 — an advanced gas generator technology program that also forms the basis for CFM's Leap engine for the Airbus A320neo, Boeing 737 MAX and Comac C919 airliners.

GE passed the Toll Gate 3, or critical design review, on the overall program in October 2011 and has released initial hardware for assembly of the first of seven engines in the test program. The first engine to test is set for second quarter 2013, with first flight on a flying testbed in 2014. Engine certification is set for the following year.

Recent testing includes validation of the solid titanium, 52-in.-diameter blisk (bladed disk) fan, thought to be the largest unit of its type ever produced. Upcoming rig-level tests include fan-blade off, icing and aeromechanical evaluation.

The Passport engine is designed to have at least 8% lower specific fuel consumption than current business jet engines in the 10,000- to 20,000-lb. thrust class, double-digit margin to CAEP/6 regulations on all emissions (NOx, smoke, hydrocarbons and CO) and air transport-like standards of reliability.

General Electric-Honda HF120

General Electric-Honda HF120

General Electric-Honda's HF120 turbofan is under development for the HondaJet light business aircraft. Up until last year the program was aimed at delivering the first aircraft in third quarter 2012, but HondaJet says HF120 development issues have forced GE-Honda to push engine certification back to the second half of this year. The knock-on delay means first deliveries of the HondaJet have slipped by around nine months to mid-2013.

The main issue has been susceptibility of fan blades to damage during ice ingestion testing. GE-Honda developed a revised fan with improved characteristics that successfully passed ice slab operability tests in August 2011. The engine was sent to GE's recently opened ice test facility in Winnipeg, Canada, in March to resume certification work.

Despite the engine issue, flight testing of the aircraft continues with the third conforming aircraft (F2) joining the flight test program in November 2011. The aircraft is being used for mechanical system tests. F3 will be the avionics and electrical systems test aircraft while F4 will be allotted to tests of the cabin as well as functional and reliability tests.

Honeywell HTF7000

Eight years after debuting on Bombardier's Challenger 300, the HTF7000 program is entering a major expansion phase with a second new application poised for entry-into-service and a third entering flight tests. Honeywell's first all-new centerline engine since the TFE731 of the 1970s, the HTF7000 is in full-rate production for the Challenger 300 with more than 700 engines shipped to-date.

More than 20 of these engines have been retrofitted with the low emissions Saber I combustor, which is designed as a drop-in replacement with greater durability than the original unit. A more advanced Saber II combustor is also in development and aimed at going some 20% beyond the 30% reduction in nitrous oxide emissions achieved with the first Saber combustor.

Honeywell is meanwhile expanding the HTF7000 production line to accommodate the newly introduced HTF7250G variant for Gulfstream's super-midsize G280 as well as the upcoming HTF7500E for Embraer's

Honeywell HTF7000

midsize Legacy 450/500. Certified in March 2011, the HTF7250G shares the same basic architecture as the HTF7000 but with an improved centrifugal compressor, Saber I combustor and fan bypass intercooler inlet duct. The G280 engine is rated for a higher 7,445-lb.-thrust takeoff setting than the 6,826-lb.-thrust baseline HTF7000 engine. Entry-into-service is expected in mid-2012.

Honeywell expected to deliver seven HTF7500Es to Embraer by mid-April to support the Legacy flight test campaign. Although originally due to begin flight tests earlier in 2011, the first ground runs were only completed at the very end of last year. The HTF7500E, although essentially identical to the HTF7250G, will be certified with a lower thrust rating of around 6,540 lb. The engine is, however, slightly modified with features to lighten the overall installed weight and improve tip clearance and fuel efficiency.

Further off, Honeywell continues notional studies of higher thrust engines that build on the HTF7000 architecture but use more advanced technology. Originally aimed at an HTF1000 demonstrator covering the 9,500-11,000 lb. thrust class, the growth studies were later extended to cover potential engines all the way up to 16,000 lb.

Pratt & Whitney Canada PW800

Pratt & Whitey Canada has realigned the focus for its next-generation business engine development toward higher thrust applications. The move, which follows the demise of the PW810-powered large-cabin Cessna Columbus project in 2009, is designed to position P&WC as a player in the apparently recession-proof long-range business jet market.

The company is therefore targeting the 12,000-lb. to 16,000-lb. thrust class with an emphasis at the upper end of the bracket. With much of the heavy lifting behind it in terms of core development, P&WC is developing a new demonstrator that will not be a straightforward geared fan derivative, but rather an advanced conventional turbofan. The demonstrator will merge the PW800-based core of the commercial PW1000G geared turbofan with a new low-pressure spool. This configuration is more optimized to the rapid climb performance requirements of business jets.

P&WC is keeping tight-lipped about the details but is thought to have opted for the larger core of the PW1500G — currently in flight test for Bombardier's CSeries airliner. P&WC's other choice, the slightly smaller thrust PW1200G for Mitsubishi's Regional Jet, is set to begin flight tests sometime in April.

P&WC declines to comment on the status of the demonstrator, which, when first revealed in mid-2011, was due to run in early 2012. The company also described reports of the selection of the PW800 for Gulfstream's secretive P42 clean-sheet G450 successor project as "premature."

Pratt & Whitney PW1000G family

Pratt & Whitney is commencing assembly of the first PW1100G geared turbofan, a future engine option for the Airbus A320-based ACJ. To date, Pratt has garnered over 2,500 orders and options for its geared turbofan series, which was launched with the PW1200G and PW1500G versions for Mitsubishi's MRJ regional jet and Bombardier CSeries respectively.

In the mid-thrust battle for the re-engined A320Neo with CFM, Pratt is banking on experience gained from these two smaller engine programs as it develops the larger PW1100G, as well as the follow-on PW1400G for the similarly sized Irkut MC-21.

The CSeries engine, mounted on one

Pratt & Whitney Canada PW800

SaM 146 engine

Silvercrest demonstrator assembly

of Pratt's two Boeing 747SP testbeds, meanwhile completed a second phase of flights at the company's Mirabel, Quebec, test facility in early March. The first PW1200G MRJ engine to fly was transported to Mirabel around the same time in readiness for flight tests that were scheduled to start in April.

Around 2,000 engine test hours have so far been accumulated on the program, 1,300 hr. of which have been amassed by five CSeries engines. Four MRJ test engines have been built and run, and together with rebuilds of two CSeries and one MRJ engine, this means a total of 12 PW1000Gs have been built so far.

As with the CSeries and MRJ engine test programs, the A320Neo effort will involve eight engines with the first on track to start tests in the fourth quarter of this year. Following an initial 25 flight, 115 flight-hour test effort on the Boeing 747SP, the CSeries flight test engine was returned to undertake ground tests with a production Goodrich nacelle.

Design improvements and "minor upgrades" were added prior to the start of a cyclic endurance test covering 1,000 simulated flights. Modifications were made to the oil and lubrication system to optimize pressure across bearings and seals that manage oil distribution and aero leakage that are used for cooling.

The second flight test effort, lasting 26 flights and 130 hr., explored engine handling, restart capability and modifications to improve the efficiency of the compressor and fan. The changes were concerned with clearance management, thermal growth and tighter clearances, as well as slight changes to the aerodynamic profile of the production standard fan blade. A third flight test phase in "late summer" will fly the CSeries engine with the full-up production nacelle and validate the final electronic control logic.

Snecma Silvercrest and SaM 146

Snecma's long-term plan to penetrate the business aviation market received a valuable boost thanks to the launch of the Sukhoi Business Jet at last year's NBAA convention in Las Vegas. Based on the Superjet 100 airliner, the fly-by-wire aircraft is powered by the 14,000- to 17,500-lb.-thrust SaM 146 turbofan produced jointly by Snecma and Russia's NPO Saturn. The first two aircraft will be delivered for outfitting to the Comlux Group completion center in Indianapolis in early 2014.

Snecma's main business aviation focus remains on development of the 9,500- to 12,000-lb.-thrust Silvercrest engine for potential super-midsize and large business jet applications. The project emerged initially from studies into a 50-seat regional jet engine, and despite the current doldrums in this sector, the company still harbors ambitions to ultimately develop versions for 40- to 60-seat passenger aircraft.

The project emerged in 2006 amid a flurry of new 10,000-lb. engine projects chasing a handful of embryonic midsize and super-midsize concepts. One of these was Dassault's SMS twinjet, which, to the surprise of the industry, selected Rolls-Royce's RB.282-3 as its engine choice in 2007.

However, following the onset of the global recession in 2008, Dassault and Rolls-Royce parted ways over the French manufacturer's decision to slow development. As a result, the engine contest was reopened in 2009 with the Silvercrest being tipped as the most likely front-runner. Dassault has targeted a certification date of 2016 for the SMS. **BCA**

2012 Avionics

Tablet computers and touch-screen avionics are making the "portable cockpit" more productive and efficient than ever.

By Mal Gormley
malgormley@gmail.com

Avionics makers, recognizing the phenomenal popularity of inexpensive, go-anywhere, tablet-based applications, have been feverishly developing ways to bring iPads and Adroid-based "post-PC" mobile OS tablet computers into business aircraft cockpits.

Pilots, eager to replace their weighty flight bags and cumbersome laptops are enthusiastically adopting them. Electronic flight bags, though still popular, will likely give way to the even lighter tablets since they feature longer battery life, lower cost and greater flexibility. Some vendors, such as Esterline CMC and DAC International, have developed crossover products that leverage the best features of tablets and EFBs. Based on the number of announcements by developers below, they're finding their way across the entire spectrum of aircraft cockpits.

While iPads can legally be used to replace paper charts under FAR Part 91, FAA approval is required for Part 135 and Part 91K fractional operators. As an NBAA Information for Operators letter points out, the FAA cautions, "Operators transitioning to a paperless cockpit should undergo an evaluation period during which the operator should carry paper backups of the material on the EFB."

The FAA also has issued a letter to its Flight Standards District Offices endorsing the process of approving Part 135 operators under specific guidelines. The approval for one operator does not, however, constitute a blanket approval for all Part 135 or Part 91K operators; rather, each must receive individual approval.

Meanwhile, at least two OEMs have quietly added "Reset" buttons to their offerings, indicating that a growing number of pilots may be admitting the need for a "fail safe" mode when everything suddenly seems to be going to south in a hurry.

With all of this in mind, what follows are highlights of the many significant avionics OEM product and avionics-related developments of the last 12 months. The tables that accompany this feature provide further details on many of the products described.

ARINC Direct

ARINC Direct's new iPad cockpit application includes streamlined access to flight plans, weather information, charts and NOTAMs through the ARINC Direct portal. It updates and stores all flight-relevant information automatically each time a pilot logs on.

The ARINC app enables fast access to flight-plan packages and trip records by city pair, tail number and departure date. Users can view D-ATIS, METARs, TAFs, NOTAMs and winds aloft for departure, arrival and alternate airports. Airport diagrams, takeoff minimums, instrument approach plates, DPs and STARs are displayed from local storage.

Flight plans can be re-computed and new fax packages generated for current

conditions. Pilots can update flight plans using the touch screen and email uploads using "sign and send" technology available with SwiftBroadband connectivity.

ARINC's next release will feature background processing and downloading for streamlined operation, as well as access to D-ATIS and EADS Charts.

Aspen Avionics

Robinson R22, R44 and R66 customers will soon have a glass cockpit option.

Dallas-based Aspen Avionics is making its Evolution primary flight display (PFD) system available as a factory option on all three models of Robinson helicopters. The option is expected to be available late this year. Evolution is designed for helicopter operations. Its features include:

- Solid-state AHRS technology
- Built-in 30-min. backup battery
- Built-in emergency GPS
- Digital HSI with moving map, GPS flight plan overlay, ARC and 360 viewing modes
- Integration with primary navigation system, ADF, DME, VOR and autopilot

Aspen also offers a new Jeppesen terrain database for the Evolution product line, which improves resolution notably in markets outside of the U.S. In addition, the database resolves some limitations experienced by some Evolution Synthetic Vision (ESV) customers, and expands the ESV operation area worldwide. The one-time terrain database upgrade is free for Aspen customers with active Jeppesen data subscriptions.

Meanwhile, Aspen's new Connected Panel technology wirelessly links mobile devices to certified avionics and is compatible with the Garmin GNS 400W/500W series navigators. With this new capability, Connected Panel-enabled apps will be able to synchronize and cross-fill flight plan data from an iPad to Garmin GNS navigators. Connected Pilot comprises hardware and software components that can be integrated with an Evolution 1500, 2000 or 2500 flight display system.

Connected Panel integrates aviation application data from personal handheld devices with the certified avionics installed in an aircraft's panel. This technology is enabled via Aspen's Evolution Flight Displays, which are interoperable with a wide variety of avionics equipment that exists within the general aviation aircraft fleet.

All or part of Connected Panel functionality will be available for new and legacy GPS navigators, depending upon its ability to transmit and receive data. For example, the Bendix/King by Honeywell KSN 770 nav/com/GPS will be fully integrated with Connected, with functionality such as comm radio tuning from the iPad, which may be unavailable to other avionics not designed with the Connected Panel architecture in mind.

Aviation Communication & Surveillance Systems (ACSS)

To comply with European Aviation Safety Agency (EASA) requirements for TCAS-equipped aircraft operating in European airspace, ACSS, the Phoenix-based joint venture between L-3 Communications and Thales, has certified Change 7.1 for all of its TCAS products, which include the TCAS 2000, TCAS II, TCAS 3000SP and T2CAS. Once Change 7.1 is installed, operators will be compliant with the new C119c TCAS standard.

The company's TCAS 3000SP (Surveillance Processor) and RCZ-852 Mode S transponder recently secured type certification as a customer option on the Cessna Citation Mustang. TCAS 3000SP is ACSS's next-generation traffic alert and collision avoidance system, complete with Change 7.1 software. TCAS 3000SP operators can upgrade the software in the unit to include other safety avionics, such as ADS-B. The RCZ-852 is a full-feature ICAO Level 3 Mode S diversity transponder optimized for regional and corporate aircraft.

Avidyne IFD510

Avidyne

Avidyne has added a touch-screen FMS to its lineup. The IFD510 SBAS/LPV/RNP-capable GPS navigation system is a slide-in replacement for existing GPS500/W GPS-only navigators found in many turboprop and light jet aircraft. It is an extension of Avidyne's recently announced plug-and-play avionics line, which includes the IFD540, touch-screen FMS/GPS/nav/com. All of Avidyne's panel-mounted avionics, including the MX240 audio panel and AXP340 mode transponder with ADS-B Out, are available with optional gray bezels to match the other avionics in typical turbine-class aircraft panels.

The C146c-TSOed IFD510 has the same FMS as Avidyne's Entegra Release 9 and the recently announced IFD540 FMS/GPS/nav/com. Featuring graphical flight planning, the IFD510 provides "one-touch" Victor airway and jet-route navigation, GeoFill waypoint nomination and FMS Vectors capability. FMS Vectors provides fully coupled guidance through all phases of flight without the manual autopilot interaction and suspension of flight plans typically associated with legacy avionics.

The IFD510 supports Avidyne's CMax electronic approach charts and airport diagrams, and also includes terrain awareness and alerting as standard, with an option for integrated Class-B TAWS functionality.

The IFD510 provides 20% larger screen area, 400% more pixels and an improved

Aspen Avionics Evolution 2500

interface over existing GPS500/W-series navigators. It is designed to integrate with all existing equipment including PFDs, EFIS, CDIs, HSIs, remote sensors, discrete, autopilots, MFDs, etc.

The IFD510 has a retail price of $14,995 including tray and installation kit and is expected to be available in the second half of this year. The integrated TAWS-B option is an additional $7,995. Add $1,000 for the gray bezel option.

Cobham plc

Cobham's 3-D Synthetic Vision EFIS has received Brazilian validation for Aerospatiale AS350/355 model series helicopters, allowing for aftermarket installation in that country. The EFIS had previously received validation for Bell 206 and 407 helicopters.

The fully digital EFIS from Integrated Systems, a business unit of Cobham Commercial Systems, offers features such as an integrated helicopter terrain awareness and warning system (HTAWS), an integrated FMS, Highway-In-The-Sky (HITS) predictive flight director, and hover vector.

DAC International

DAC International, a subsidiary of Greenwich AeroGroup, has introduced an interface unit to bridge the gap between a Class II EFB tablet computer and aircraft power and data.

DAC engineers designed the interface called GDC64, certified for use on Part 25 business and transport jets. As such, it is approved for connection to any of the aircraft's +28 volt power buses, and with four ARINC 429 input ports, the GDC64 can provide a wealth of information to an iPad or other tablet computers, including navigation and air data information.

Esterline CMC

CMC Electronics recently shipped its 500th SureSight enhanced vision system (EVS) sensor. The SureSight CMA-2600 and CMA-2700 offer enhanced situational awareness in adverse visual conditions and enable operators to take advantage of regulations expanding the operational capabilities of EVS-equipped aircraft.

The CMA-2600 sensor is in use on the Bombardier Global Express and Global 5000; Dassault Falcon 900, 2000 and 7X; and the BBJ.

According to CMC, its recently certified CMA-2700 sensor offers the highest resolution available for an EVS sensor and four times the resolution of other systems. It features state-of-the-art digital image processing, including dynamic non-uniformity corrections and, CMC says, it is the first EVS fully compliant to ARINC 818 Avionics Digital Video Bus standards. The sensor is part of Bombardier's Global Vision cockpit.

CMC also received FAA STC approval to install its Class 2 PilotView EFB on the BBJ aircraft. The certification covers a dual installation enabling paperless cockpit operations, including aircraft data, procedures manuals and interactive electronic charts.

The PilotView EFB stays powered during all flight phases and integrates with a number of aircraft systems. The self-contained system features an Intel Dual Core i7 processor, LED-backlit display, and 10.4-in. touch screen. The EFB integrates with the ACSS ADS-B sensor technology and SafeRoute applications to deliver airport moving map with own-ship position for taxiing. It is also approved for real-time ACARS messaging over VHF-based and satellite services.

Over 25 STCs are available for the PilotView on aircraft ranging from the Embraer Legacy 600/650 up to the BBJ.

In addition, CMC's new Tandem combines the communication and file processing capabilities of PDAs such as the iPad with PilotView. Tandem is designed to support flight planning, briefing and EFB applications data management activities for crews who want to use their PC tablets or PDAs on the ground and their Class 2/3 installed EFBs on the aircraft. Tandem allows users to leverage the capabilities of advanced PDAs in terms of applications, connectivity (Wi-Fi, 3/4G) and data storage support.

Free Flight Systems

Waco, Texas-based FreeFlight Systems, manufacturer of nav management and other avionics systems, has received ETSO-C287 from EASA for its RA-4000 and RA-4500 radar altimeters. The systems consist of a remote unit and dual antennas, and provide AGL information from 2,500 ft. down to ground level. Both radar altimeters can interface to FreeFlight Systems' RAD-40 stand-alone digital display. The RA-4500 also offers ARINC 429 output allowing interface with EFIS and flight director systems.

According to FreeFlight, the precision of the RA-4500 is exceptional even over "soft" terrain such as high grass, blowing sand or water.

The RA-4500 meets the radar altimeter regulation JAR-OPS 3.660 in Europe. Meanwhile, ECT Industries has STCs under way for the RA-4500 in the Eurocopter AS350 and AS355, and expects certification soon. The RA-4000 offers a serial interface, weighs 1.9 lb., and is priced at $8,665. The RA-4500 offers an ARINC 429 interface, weighs 1.9 lb., and is priced at $9,925.

Garmin

Garmin Pilot, a new aviation app for the iPad, iPhone and Android-based mobile devices, offers complete navigation, trip planning, DUATS filing, EFB capabilities and aviation weather information for the U.S. and Canada.

Pilots can overlay weather on the map, add text-based weather widgets and use the NavTrack feature to look ahead along the planned route to preview weather conditions. Using their DUATS account, pilots can receive and log FAA-approved weather briefings that meet legal briefing requirements. Using the built-in GPS receiver or compatible external receiver (sold separately), Garmin Pilot provides full en route nav capability on its moving map, while showing ETE, ETA, crosstrack error, distance to waypoint and current position.

Additionally, Garmin Pilot includes IFR high and low en route charts, sectionals and Garmin FliteCharts. Optional geo-referenced FliteCharts and SafeTaxi diagrams are available to assist in navigating approach procedures and unfamiliar airports, and all charts can be

Free Flight Systems RA-4500 with ARINC 429 interface, mounting tray, dual antennas, and RAD-40 Radar Altimeter Display

downloaded to the device for easy access while in flight.

Meanwhile, Garmin's new G5000 integrated flight deck system, which Cessna has selected for its Citation Ten flagship, is intended for use aboard a broad range of professionally flown aircraft. The user interface is based upon lessons learned from Garmin's G1000 and G3000 systems used on smaller aircraft, but with hardware and software upgrades required for jet transport operations. Significantly, Garmin plans to develop a full line of complementary avionics for the G5000 so that it won't have to rely upon outside avionics firms to fill in critical gaps in its product mix.

The success of Garmin's 3000 series was due to development of its Vehicle Management System (VMS), a 5.7-in., full-color, touch-screen controller with iPhone-like icons in place of the myriad buttons and line select keys found on conventional CDUs. The G5000 retains the pilot interface of the G3000, as well as upgrades required for Part 25 aircraft.

Garmin Pilot iPad app

Garmin has also revealed its new solid-state, GWX 70 Doppler turbulence detection weather radar, boasting a 50-watt, 300-nm range ARINC 708A spec system with higher gain and lower noise than most solid-state weather radars aboard air transport category aircraft. The combination makes it better able to suppress ground clutter, resulting in improved turbulence detection.

In addition, Garmin now offers electronic AC-U-KWIK airport directory data on its G500, G600, G500H, G3X, G300, G900X, G950, G1000, G1000H, G2000, G3000 and G5000 glass flight decks. The data of more than 7,800 airports globally include information on FBOs and handlers, fuel providers, customs information, ground transportation, charter companies, catering services and more.

Meanwhile, Garmin has received EASA validation of its Electronic Stability and Protection (ESP) and Iridium data link in G1000-equipped King Air 200 and B200 models. ESP is an electronic monitoring and exceedance-correcting technology for Garmin integrated flight decks that seamlessly helps prevent the onset of stalls and spins, steep spirals or other loss-of-control conditions should the pilot become distracted, disoriented or incapacitated. ESP inputs can be easily overridden manually and the system disengages when the aircraft returns to its normal flight.

Gulfstream Aerospace

Gulfstream Aerospace recently introduced its PlaneBook app, an iPad document management system that provides pilots access to critical flight information and aircraft-specific documents, such as the Airplane Flight Manual, Operating Manual, pilot checklist and the Quick Reference Handbook (QRH). The electronic version of the QRH, which includes emergency flight procedures, serves as the master document that links to all other documents for easy cross-referencing.

With PlaneBook pilots can create and add their own content, including checklists, standard operating procedures and other reference materials. In addition, since documents and manuals are downloaded straight to an iPad, users will have offline access to all of their important information.

Honeywell

Honeywell's Primus Epic-based EASy II software package for the Dassault Falcon 900 EASy now includes SmartView SVS and Required Navigation Performance — Approval Required (RNP-AR).

EASy II is the second application of SmartView, which relies on Honeywell's enhanced ground proximity warning system (EGPWS). The satellite based augmentation system — localizer performance with vertical guidance (SBAS-LPV) is also available with EASy II and provides vertical guidance during LPV approaches. In addition, EASy II is compatible with the European SBAS — the European Geostationary Navigation Overlay Service (EGNOS), a recently implemented system that allows more flights to carry out precision approaches at European airports safely and efficiently. EGNOS is similar to the Wide Area Augmentation System (WAAS) available in the U.S.

Also included with EASy II is Honeywell's SmartRunway and Automatic Descent Mode features. SmartRunway is designed to help reduce the risk of runway excursions by providing alerts when the aircraft is approaching the runway either too high, too fast or is not configured properly. Automatic Descent Mode activates automatically in the event of cabin depressurization at high altitude. In case of crew incapacitation, the autopilot immediately guides the aircraft to a safer altitude at maximum velocity.

Later this year Dassault expects to release an upgrade for installation of EASy II features on new production Falcon 900LX aircraft and on existing Falcon 900 EASy series aircraft.

Innovative Solutions & Support (IS&S)

Philadelphia-based IS&S is teaming up with Eclipse Aerospace to provide Vantage Premier avionics suites for the EA500 and EA550 business jets. IS&S will supply the airframe maker with PFDs and MFDs as well as integrated FMS and EFBs on the two Eclipse models.

Thirteen talented microprocessors in the IS&S displays control all major aircraft systems including electronic circuit breakers, radios, transponders and radars. FMS precision navigation, coupled auto-throttle, full VNAV and synthetic vision give the Eclipse twin-engine jet impressive performance. The aircraft-specific synoptic pages provide for a graphical presentation and control of all major subsystems including calculations for takeoff/landing performance as well as weight and balance. The FMS features include:

- Coupled WAAS/LPV approaches
- Full RNP 0.1 compliance
- Required time of arrival (4-D

trajectory to each waypoint)
- Fully coupled flight profile performance-based VNAV
- Autothrottle controls
- Dual FMS with synthetic DME capability
- Dual IS&S Beta 3 GPS receivers
- The integrated electronic flight bag features include:
- Airport diagrams and approach
- Moving maps
- XM satellite weather
- Electronic checklists
- Display and control of enhanced vision system

Video data are presented on the high-resolution 15-in. multifunction LCD.

Meanwhile, IS&S is offering cockpit makeovers for Boeing 737-300/-400/-500 series aircraft with its cockpit/IP flat panel display system. The cockpit upgrade of the 737 replaces aging flight instruments on the FPDS, using a 10.4-in. display architecture that provides enhanced situational awareness through greater access to navigational aids. It also offers increased functionality, reduced crew workload, weight reduction and improved dispatch capability. This program complements the FPDS already in service on more than 100 757/767 aircraft.

The 737 FPDS offers an open architecture flat-panel display system that allows operators to upgrade their aircraft to a glass flight deck while leaving third-party avionics installed in the aircraft, thereby minimizing costs and downtime.

International Communications Group (ICG)

ICG is teaming with Overlook Consulting Inc. to bring operational approval services to pilots and flight departments that have a need for Future Air Navigation System (FANS1/A) and polar routing solutions using ICG's NxtLink Series ICS-120A and ICS-220A Iridium transceivers. FANS-equipped aircraft enjoy preferred assigned and user preferred routing, dynamic rerouting, weather deviations, access to polar routes and improved ATC communications, all of which reduce the cost of flight in oceanic and remote airspace.

The company noted that two of the North Atlantic Tracks will likely become FANS-only by the end of 2012 with other tracks to follow. In addition, aircraft operating with FANS by February 2014 will be exempt from Europe's Link 2000 requirements. ICG's NxtLink Series ICS-120A and ICS-220A transceivers provide the communications required to meet the respective mandates.

IS&S is teaming up with Eclipse Aerospace to provide Vantage Premier avionics suites for the EA500 and EA550 business jets.

Overlook Consulting has provided certification policy and approvals for the U.S. Air Force FANS 1/A fleet of more than 14 different aircraft types. The organization has decades of involvement in the creation of aviation industry standards as part of the RTCA, AEEC, ICAO, IATA and similar organizations, including development of virtually all of the FANS 1/A technical criteria.

Jeppesen

Jeppesen recently completed a successful rapid decompression test of an iPad as part of the program to obtain FAA authorization for inflight use of Jeppesen's mobile app solutions on the iPad. (To see a video that shows the rapid decompression test and discusses EFB hardware qualification, visit YouTube.com and search for "Jeppesen and Garwood Labs Rapid Decompression Test.")

Meanwhile, Jeppesen's Mobile FliteDeck iPad app for consumer use is available for free download for Jeppesen digital data subscribers through Apple's App Store or at www.itunes.com/appstore/. To use the app, customers need a JeppView or Express JeppView subscription.

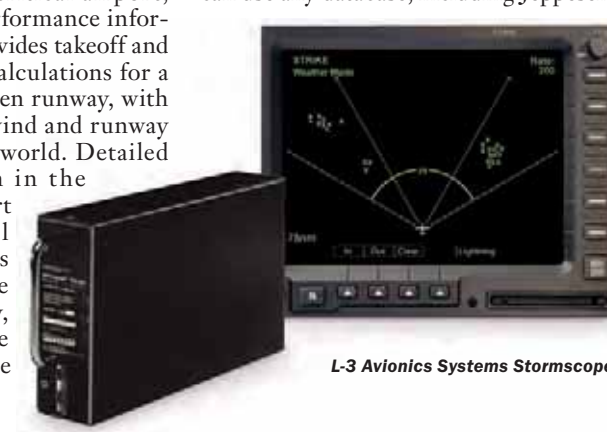
In related news, The House of Jepp has rolled out a new Web-based Runway Analysis service that provides aviation operators with flight critical airport, runway and aircraft performance information. The service provides takeoff and landing performance calculations for a specific aircraft at a given runway, with specific temperature, wind and runway conditions around the world. Detailed obstacle information in the departure path of airport runways and special departure procedures for each runway also are included. Additionally, calculations advise the operator what the maximum takeoff weight is for each specific departure.

The Airport Data service is available for use with an onboard performance tool or EFB. Jeppesen Airport Data is compatible with several aircraft systems, including the Boeing OPT, Airbus LPC and Embraer OPERA, and also can be used by systems that accept Teledyne, PACE and standard XML formats. Data are updated every 28 days, and the information complies with the Standard Computerized Airplane Performance (SCAP) industry standard.

L-3 Avionics Systems

L-3 Avionics Systems and Astronautics Corp. of America (Astronautics) have teamed to introduce an EFB loaded with charting and moving map applications. Using Astronautics' newest EFB, the Class 3 NEXIS Flight-Intelligence System, combined with L-3-developed software technology, the EFB provides own-ship position display in relationship to air traffic, terrain, weather and airport features. The app allows for building enhanced chart clip lists by preselecting standard terminal procedure charts, arrival and departure charts, and airport relative to the flight plan.

Built using an open software architecture, the new charting application can use any database, including Jeppesen,



L-3 Avionics Systems Stormscope

Lido/RouteManual and Navtech.

And here's a milestone: L-3 Avionics has produced the 60,000th Stormscope Weather Mapping System, a product continuously manufactured since its 1976 introduction to general aviation. First released as the Ryan — later the BF Goodrich — Stormscope WX-7, the instrument (as well as the similar Insight Strikefinder) has become an industry standard for severe weather detection in light aircraft.

Notably, at a Washington, D.C., ceremony last month, the Aircraft Electronics Association (AEA) awarded Stormscope inventor Paul Ryan with its Lifetime Achievement Award.

Max-Viz

Max-Viz and Aggressive Insurance of Irving, Texas, are offering a 5% discount on aviation insurance policies written through Aggressive Insurance for the entire premium of any aircraft equipped with a Max-Viz Enhanced Vision System (EVS). Aggressive Insurance (www.aggressiveaviation.com) provides insurance for owners of smaller, piston-driven aircraft.

"In case after case, Max-Viz Enhanced Vision System technology has resulted in increased situational awareness and definitely improves operational safety and accident/incident avoidance," states Brian Bozick of Aggressive Insurance. "It is clear that the inclusion of safety technology is a mindset and evidence of proactive thinking by operators and pilots. These prove to be the owners who are the most careful and considerate of their passengers, their plane and exposures on the ground.

"We believe that recognizing owners of this type who use EVS and other safety equipment should be rewarded with lower insurance costs," Bozick adds. Hard to argue with that logic.

Bob Yerex, vice president of sales for Max-Viz, states, "Both Max-Viz and Aggressive Insurance recognize that EVS is not the only answer in mitigating the hazards of reduced visibility and nighttime operations; however, it is one of the only technologies that provide this level of overall situational awareness."

navAero tBagC22 EFB

navAero

Sundsvall, Norway-based navAero will supply TUIfly Nordic, the largest charter company in Sweden, with its tBagC22 EFB for the carrier's Boeing 737-800 and 767-300 fleets.

The contracted navAero EFB architecture includes cross-connected dual tBagC22 EFB systems with the newly commercialized tPad2000 display. The systems will also include the navAero-designed UMTS/HSDPA/3G cellular communications modem module to enable data transfer on the ground.

TUIfly Nordic plans to equip the EFBs with the Lufthansa Lido/eRouteManual software suite and the TUI Group Aircraft Performance Software. It will also integrate its operational document browser software on the EFB. This is part of a proprietary solution for the Windows PC, Mac OS X and iPhone/iPad platforms used by flight crews to have offline access and stay up to date with company manuals, briefs and operational notices.

Northrop Grumman LITEF GmbH

A new fiber-optic inertial nav system/global positioning system (INS/GPS) developed by Northrop Grumman's LITEF GmbH nav systems subsidiary has been selected by Cessna Aircraft for installation on its upgraded Citation Ten.

An improved version of the company's successful LCR-100, the LCR-100N provides navigation information regarding the aircraft's position, heading and attitude, even when GPS data are not available. The LCR-100N also offers the precise navigation needed for RNP airspace.

The LCR-100N consists of a hybrid navigator unit that accepts GPS position and velocity data, a calibration device and a mounting tray. Production deliveries will commence this year.

Northrop Grumman LCR-100

Rockwell Collins

For the third year in a row, Cedar Rapids, Iowa-based Rockwell Collins was selected as one of the World's Most Ethical Companies by the Ethisphere Institute, a leading international think-tank dedicated to the creation, advancement and sharing of best practices in business ethics, corporate social responsibility, anti-corruption and sustainability.

Meanwhile, Collins is bringing the capabilities of its Pro Line Fusion integrated avionics system to air transport and military aircraft. The system integrates and displays essential flight information through high-integrity head-up guidance featuring synthetic and enhanced vision, and large-format (15-in.) LCD PFDs. This latest configuration of Pro Line Fusion includes touch-control primary displays, integrated head-up synthetic vision and autonomous backup flight control modes. Additional features include MultiScan weather threat detection and full integration with Ascend flight information.

Pro Line Fusion was certified in June 2011 on the Bombardier Global 6000. The system has been selected for 11 aircraft thus far and will be available as a display retrofit for turboprops and light jets equipped with Rockwell Collins Pro Line 21 avionics.

In addition to touch-control PFDs, Pro Line Fusion's features will include Rockwell Collins' HGS-3500 head-up guidance system (HGS) with synthetic vision for light- to midsize business aircraft. Additionally, Pro Line Fusion

Rockwell Collins Pro Line Fusion integrated avionics system

features the company's MultiScan Threat Detection System and autonomous one-touch emergency control, and is globally networked with Ascend flight information services.

Rockwell Collins recently unveiled its new Flight Manager app for the iPad and its Ascend Dashboard integrated desktop solution for Ascend information users. The Ascend Dashboard is an integrated desktop computer program for flight ops directors that provides an at-a-glance view of all the aircraft in the fleet, current and upcoming trips, the status of electronic database updates and fleet maintenance monitoring.

The full range of Ascend flight information solutions includes:

- FOS schedule and dispatch software
- Regional and international trip support
- Fuel pricing and service information
- Aircraft Information Manager (AIM) wireless content updates, including FMS databases
- Flight Watch for dedicated meteorologist services
- Personalized expert services such as ground handling and compliance assistance

Sandel

Sandel Avionics 3-ATI SN3500 and 4-ATI SN4500 primary navigation displays have been TSOed for their roll-steering software upgrades. The pilot-selectable feature works with an aircraft's autopilot or flight director and compatible GPS or FMS unit to automatically make smooth, hands-off turns while flying a sequence of GPS waypoints.

The new roll-steering function, which requires field loading software but no wiring or modification to existing SN3500/SN4500 installations, also flies holding patterns, GPS approach entries and other maneuvers not supported by standard autopilot tracking modes.

The Vista, Calif.-based manufacturer also has been chosen by Sikorsky to provide a new MIL-STD version of its Sandel HeliTAWS wire and terrain alerting system — designated the ST3453H — for forward-fit installation aboard the new S-70i Black Hawk helicopter in mid-2012. The commercial ST3400H HeliTAWS is the industry's first multi-hazard avoidance system for helicopters that protects against terrain, wires and obstacles, and is the only terrain avoidance system certified for nuisance-free operation below en route altitudes.

Unique features of HeliTAWS include its WireWatch wire-strike avoidance capability; TruAlert technology to eliminate nuisance alerts; and a choice of pilot-selectable modes of operation. The new HeliTAWS ST3453H model incorporates all the features of the commercial version and MIL-STD-3009 NVIS, MIL-STD-810E Environmental Qualification and a built-in MIL-STD-1553B bus interface.

Universal Avionics Systems Corp.

Now celebrating its 30th year, Universal Avionics has received registration to Aerospace Standard ISO-9001:2008/AS9100C, signifying it meets the standards for Quality Management System requirements for Aviation, Space and Defense Organizations. Compliance with this quality standard serves to ensure improved product quality, customer satisfaction, supplier control, program management, risk management and manufacturing efficiencies through the implementation and use of thoroughly documented and controlled processes and procedures.

Meanwhile, Universal's new Vision-1+ synthetic vision system (SVS) expands on the proven technology of Universal's original Vision-1 SVS, with feature upgrades that include departure and destination runway depiction, new high-resolution terrain database and extended runway centerline.

Updated hardware and software combine to enable the high-resolution display of runways for origin and destination airports. Vision-1+ runway symbology includes threshold and identifier information, plus a 7.5-nm extended centerline to assist in orientation in the terminal area. Terrain and runways are presented in 15 arc-second data resolution

Sandel Avionics 4-ATI SN4500

worldwide with three times the coverage of six arc-second data in the vicinity of airports. Runway depictions are viewed from the Vision-1+ Egocentric View, which provides the pilot a forward-looking perspective. Vision-1+ is available for new product installations and upgrades to the existing Vision-1 SVS.

The new HondaJet will feature Universal Avionics cockpit voice and flight data recorders as a factory option. The new CVFDR meets emerging requirements for cockpit voice and digital flight data recording presented by the NTSB and the newest FAA TSOs. Universal's CVFDR line has been selected by most major aircraft OEMs including Bombardier, Embraer, Gulfstream, Hawker Beechcraft, Learjet and Sikorsky.

Operators who anticipate use of FANS-compliant avionics should note that Universal Avionics has partnered with Air Training International Ltd. (ATI) to provide FANS operational training for the UniLink UL-800/801 Airborne Data-link System. Universal Avionics has committed to provide guidance for its customers during the FANS operational approval process, and this unique collaboration with ATI will help operators meet the necessary training requirements.

Meanwhile, Universal's UniLink UL-80X Communication Management Unit (CMU) and new Airborne Data-link System provide operation and control of digital communications between the pilot and ATC. The UL-80X affords data-link opportunities for messaging, flight plan uploading, pre-departure and other clearances, automatic position reporting, ETA updates, digital ATIS and text weather information such as TAF, METARs, SIGMETs, winds aloft and TWIP. Developed in full compliance with DO-178B Level C guidelines and FANS 1/A standards, the UL-80X is also provisioned to comply with the European Link2000+ mandate (2015).

Universal's Vision-1+ Synthetic Vision System (SVS)

Upcoming mandates have prompted increased interest in Universal's UniLink UL-80X among operators in affected regions. The mandate in the North Atlantic, requiring Controller Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance-Contract (ADS-C) within specified areas brings the need for international operators to receive academic and operational use training for their FANS operational approval. ATI will offer training in Dallas, at the customers' location or online. (For further information, go to www.trainati.com or call (817) 447-7564.)

Also, Universal now offers its EFI-890H flat-panel display for helicopters. With software based on Universal's fixed-wing flat-panel display system and high-vibration environment hardware, the EFI-890H can be installed in single or multiple display architectures. The EFI-890H includes a Collective Cue feature and X-Video Night Vision Imaging System (NVIS) capabilities. When integrated with Universal Avionics' Multi-Mission Management System, the operator has the ability to fly six distinct search patterns. Its features are suited to search and rescue, reconnaissance, surveillance, maritime patrol, border patrol, geophysical survey and flight inspection missions. The unit will be approved for the Sikorsky S-76A, S-76C, S-61L, S-61N and UH-60L; Bell 212, 412, 412EP and 412CF; and Eurocopter EC-155, Dauphin N1 and N3, and AS-332 helicopters.

Universal Cockpit Voice/Flight Data Recorder (CVFDR)

Just Phone It In

The age of the portable cockpit is upon us, in the form of the many talented tablet computer apps developed for use in the front offices of everything from Bonanzas to Boeings. What's next?

Perhaps this item on Discovery.com might provide a clue: A group of Boeing engineers teamed with students at the Massachusetts Institute of Technology's Humans and Automation Lab to build an iPhone app called the Micro Aerial Vehicle Visualization of Unexplored Environments, or MAV-VUE. The app can fly a drone remotely, as demonstrated by the controllers in Seattle who were piloting the drone, which was airborne at MIT in Cambridge, Mass. BCA

VHF PANEL-MOUNT TRANSCEIVERS

Manufacturer	Model	Channels	Power Output (peak W)	Units/Weight (lb.)	Price	Remarks
	TSO	Channel Display	Power Required	Size (in.)		
Garmin International 1200 E. 151st St. Olathe, KS 66062 (800) 800-1020 (913) 397-8200 Fax: (913) 397-8282 **www.garmin.com**	**SL40**	760	8	1/2.0	$1,995	Built-in two-place VOX intercom and standby frequency monitoring functions.
	C37d C38d C128d	LED	10-40 VDC	6.25 x 1.3 x 10.5		Auto-leveling; auto-squelch; stuck-mic protection; remote-mic keying and channel call-up.
	SL30	760	8	1/2.25	$4,395	Build-in two-place VOX intercom and standby frequency functions. Nav/comm unit with standby frequency monitoring provides full VHF functionality.
	C34e, C36e, C40c, C66c, 37d, C38d, C128	LED	10-40 VDC	6.25 x 1.3 x 10.5		
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**Bendix/King KY 97A**	760	7 nominal	1/2.9	$3,616	Active/standby frequncy stored channels. LCD 14 V.
	C37c C38c	LCD; nvm	14 VDC	6.25 x 1.3 x 10.5		
	Bendix/King KY 196A	760	16 nominal	1/3.2	$5,312	Active/standby frequency; stored channels; LED, 28 V.
	C37c C38c	LED	28 VDC	6.3 x 1.35 x 10.8		
	Bendix/King KY 197A	760	10 nominal	1/3.2	$5,374	LED, NVM
	C37c C38c	LED; nvm	14 VDC	6.3 x 1.35 x 10.8		
	Bendix/King KY 96A	760	7 nominal	1/2.9	$3,164	Active/standby frequency, stored channels, LED, 28 VDC.
	C37c, C38c	LCD, non-volitile	28 VDC	6.25 x 1.3 x 10.5		
	Bendix/King KY 196B	2280	18 nominal	1/3.2	$7.246	Active/standby frequency; stored channels; LED 28 VDC.
	C37c C38c	LED; nvm	28 VDC	6.3 x 1.35 x 10.8		

VHF REMOTE-MOUNT TRANSCEIVERS

Manufacturer	Model	Frequency Display	Xmit Power (W)	Units/Weight (lb.)	Price	Remarks
	TSO	Frequency Storage		Size or Form Factor	Power Required	
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**Bendix/King KTR 908**	gas discharge	20	2/4.3	$21,483	Includes KFS 598A control with digital display of active/standby frequencies, flip-flop 118.0-151.975 MHz.
	C37c C38c	2 (9 channels); 118.0 - 151.975 MHz opt.		1.8 x 5.0 x 11.8	28 VDC	
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 **www.rockwellcollins.com**	**VHF-22A**	CTL-22G gas discharge 2x5 serial digital tuning	20	2/5.8	$18,944	Built-in diagnostics; VHF-22B, 118.0-151.975 MHz. Operates in 25 kHz tuning movements; includes CTL-22.
	C37c C38c	8 frequencies; nvm		3/8 ATR-SL	28 VDC	
	VHF-422A	CTL-22G gas discharge	20	2/5.8	$18,936*	Built-in dignostics. **BCA* estimate.
	C37c C38c	8 frequencies; nvm		3/8 ATR-SL	28 VDC	
	VHF-22C	CTL-22D gas discharge; 2 x 5 serial tuning	20	2/5.8	$21,864*	Built-in diagnostics; VHF-22D 118.0-151.975 MHz, $24,036. VHF-22D. 8.33 kHz/25 kHz tuning; includes CTL-22C. **BCA* estimate.
	C37c, C38c	8 frequencies; nvm		3/8 ATR-SL	28 VDC	
	VHF-422C	CTL-22D gas discharge	20	2/5.8	$23,696*	Built-in diagnostics; compatible only with CSDB or ARINC 429 controls; VHF-422D, 118.0-151.975 MHz, $21,756. 8.33/25 kHz tuning; includes CTL-22C. **BCA* estimate.
	C37c C38c	8 frequencies; nvm		3/8 ATR-SL	28 VDC	

VHF REMOTE-MOUNT TRANSCEIVERS

Manufacturer	Model / TSO	Frequency Display / Frequency Storage	Xmit Power (W)	Units/Weight (lb.) / Size or Form Factor	Price / Power Required	Remarks
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 **www.rockwellcollins.com**	**VHF-4000**	CTL-22 gas discharge	20	2/4.7	see remarks	Built-in diagnostics; compatible only with CSDB or ARINC 429 controls. Options: 001 baseline: includes CTL-22. 101 adds 8.33: includes CTL-22C. 201 adds Mode A/2 data; includes CTL-22. 301 adds 8.33 and Mode A/2 data: includes CTL-22C. Prices range from $13,976 to $21,892.* *BCA estimate.
	C37d C38d	8 frequencies; nvm		2.5 MCU	28 VDC	
	VHF-4000E	CTL-22C gas discharge	20	2/4.7	$21,892- $26,264*	Built-in diagnostics; compatible only with CSDB or ARINC 429 controls. Options: 101 adds 118.0-151.975 + 8.33; includes CTL-22C. 301 adds Mode A/2 data; includes CTL-22C. *BCA estimate.
	C37d C38d	8 frequencies; nvm		2.5 MCU	28 VDC	
	VHF-422D Transceiver	gas discharge	20	2/5.8	$30,168*	*BCA estimate.
	C37c C38c	8.33/25 kHz		3/8 ATR-SL	28 VDC	
	VHF-4000 Transceiver	gas discharge	20	24.7	$68,620	*BCA estimate.
		8.33/25 kHz		2/5 MCU		
	CVC-152	color LCD	N/A	1/0.75	$4,347*	Gray or black panel. *BCA estimate.
	control display			2.50 x 3.15 x 4.29	5 VDC, 5 VAC or 28 VDC	
Cobham Electronics (formerly Wulfsberg) 6400 Wilkinson Dr. Prescott, AZ 86301 (928) 708-1550 (928) 541-7627 **www.wulfsberg.com**	**CCN-955**	see remarks	N/A	1/0.75	$7,643*	Optional multi-function display; color LCD displays nav and comm data. *BCA estimate.
				2.50 x 3.15 x 4.29	5 VDC, 5 VAC, 28 VDC	
	CVC-151 FliteLine	118-136 MHz 118-11.975 MHz	20	1/3.3	$14,461*	ARINC 429 bus interface; 8.33 or 25 kHz spacing; FM immunity; auto-tune capability. FMS and radio management interface capability VDL Mode 2 & 3 provisions; color LCD shows nav and comm data. *BCA estimate.
	C169	color LCD		4.10 x 2.40 x 13.33	18 - 33 VDC	

HF TRANSCEIVERS

Manufacturer	Model / TSO	Frequency Range / Channels	Xmit Power (W)	Units/Weight (lb.) / Size or Form Factor	Price / Power Required	Remarks
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**HF-1050**	2-29.999	200 PEP (SSB)	4/29.9	$80,581	Delivers 200 W PEP transmitter power and four squelch options. "Once tuned, always tuned" coupler capability provides <20 millisecond response. PS-440 controller provides 99 user-programmable channels, clarifier functional and coupler tune status.
	C31d C32d	280,000		KRX 1053 Receiver/Exciter: 5.56 lb; 10.8 x 3.1 x 5.0 KPA 1052 Power Amplifier: 6.67 lb; 12.7 x 7.2 x 1.8 KAC antenna coupler: 9.87 lb; 13.0 x 4.7 x 9.87	28 VDC	
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 **www.rockwellcollins.com**	**HF 9000 System**	2 - 29.9999 SSB/AM AM data	selectable power output 10.50, 175 PEP	3/27.5	$99,980*	Fiberoptic interface; rapid-tune antenna coupler (40 millisecond computer training); BITE. Includes HF receiver/transmitter antenna coupler and radio-tuning unit. *Special order price and delivery
	C31d C32d	280,000; 99 operator programmable; 176 ITU r/t programmed		controller: 2.625 x 5.75 x 5.85 transceiver: 7.625 x 5.55 x 12.60 antenna coupler: 7.6 x 3.8 x 13.0	28 VDC	

HORIZONTAL SITUATION INDICATORS/COMPASS SYSTEMS

Manufacturer	Model / TSO	Gyro / Slave Rate	Autopilot Outputs	Units/Weight (lb.) / Form Factor	Price / Power Required	Remarks
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 www.honeywell.com	**KI 825 Color EHSI/MFD**	remote	extensive outputs; GPS selected discretes, EHSI-ready discretes	1/3.0	$17,554	Integrated EHSI, AMLCD; arc mode; 360 mode; course map; interfaces with numerous navigation systems and WX500 Stormscope. Priced for a new installation and a KCM 100.
	C113, C6d, C34e, C36e, C40C, C11a	—		3 ATI	14 - 20 VDC	
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 **www.rockwellcollins.com**	**MCS-65** (compass system)	remote	analog including autopilot outputs; CSDB	3/6.7	$15,608*	Digital interface with EFIS-84 CSDB. **BCA* estimate.
	C6c	2.7°/min.; 7°/sec.		ATI	28 VDC	
Sandel Avionics 2401 Dogwood Way Vista, CA 92081 (877) 726-3357 (760) 727-4900 Fax: (760) 727-4899 **www.sandel.com**	**SN3500 Primary Navigation Display**	remote	N/A	1/2.9	$13,407	3 ATI primary navigation display; sunlight readable LED backlit display with 180-de. viewing angle and over 10,000-hr. MTBF. Combines HSI, RMI, color moving map and other features. Accepts synchro, stepper motor and ARINC 429 gyro inputs. Designed to work with a wide variety of digital and analog NAV, GPS/WAAS, DME, ADF and marker beacon receivers. Compatible with the WX-500 Stormscope. Optional interfaces for traffic, $980; WSI data-link weather, $980; high-vibration version, $16,829. NVIS compatible version, $20,800.
	C113, C6d, C34e, C35d, C36e, C40e, C41d, C118, C119B	N/A		3 ATI	11-33 VDC; 33 W	
	SN4500 Primary Navigation Display	remote	analog	1/3.5	$20,950	Sunlight readable LED backlit display with 180-degree viewing angle and over 10,000-hour MTBF. Combines HSI, RMI, color moving map and other features. Accepts synchro, stepper motor and ARINC 429 gyro inputs. Designed to work with a wide variety of digital and analog NAV, GPS/WAAS, DME, ADF and marker beacon receivers. Compatible with the WX-500 Stormscope. TACAN interface available. Optional interfaces for traffic, $714; WSI datalink weather, $714; high-vibration version, $23,800. NVIS compatible version, $27,050.
	C113, C6d, C34e, C36e, C40e, C41D, C118, C119B	N/A		4 ATI	22-33 VDC; 40 W	

AUTOMATIC DIRECTION FINDERS

Manufacturer	Model / TSO	Frequencies / Frequency Storage / Display	Nav Outputs	Units/Weight (lb.) / Size or Form Factor	Price / Power Required	Remarks
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**Bendix/King KR 87**	200-1799 kHz	analog	1/6.7 P/M	$6,926	Times flight and approaches; slaved indicator and RMIs available as options. Incudes KA 44B antenna.
		nvm				
	C41c	gas discharge		6.25 x 1.3 x 11.23	11-33 VDC	
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 **www.rockwellcollins.com**	**ADF-60A**	CTL-62 190-1750 kHz (4-kHz steps)	RMI	2/6.0	$18,932*	Remote-mount; dual antenna optional. Digital tuning. Includes ANT-60A, CAD-62. *Dual system, $38,088.
		6 frequencies; nvm				
	C41c	gas discharge, 2 frequencies		⅜ ATR-SL	28 VDC	
	ADF-462	CTL62 190-1799 kHz and 2182 kHz emergency freq.	RMI	3/8.0	$18,936*	Built-in diagnostics; compatible only with CSDB or ARINC 429 controls; digital signal processing; dual antenna optional. Includes ANT-462A.*Dual system, $38,056 includes two receivers, two controls, one antenna.
		6 frequencies; nvm				
	C41d	gas discharge		⅜ ATR-SL	28 VDC	

AUTOMATIC DIRECTION FINDERS

Manufacturer	Model / TSO	Frequencies / Frequency Storage / Display	Nav Outputs	Units/Weight (lb.) / Size or Form Factor	Price / Power Required	Remarks
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 **www.rockwellcollins.com**	**ADF-4000**	190-1799 kHz 2182 kHz emergency freq.	CSDB ARINC 429	3/6.4	$18,272*	Built-in diagnostics; compatible only with CSDB or ARINC 429 controls; digital signal processing; dual antenna optional. Includes ANT-462A. *Dual system, $36,728.
		6 frequencies; nvm				
	C41d	gas discharge		2 MCU	28 VDC	
Cobham Eelctronics 6400 Wilkinson Dr. Prescott, AZ 86301 (928) 708-1550 (928) 541-7627 **www.wulfsbeg.com**	**DFS-431** **TSO C-41C**		Arinc 429, analog	5.6 6.7 x 2.85 x 13.8	18-33 VDC $4,890*	Arinc 429 bus, AFCS interface; steering guidance to/from NDB. Self-diagnostics and auto-calibration. LCD color display; power; gray or black panel **BCA* estimate.
		190-1860 kHz 2181-2183 kHz				
	AT-434A **Antenna**			0.60 3.15 x 2.50 x 4.29	5 VDC, 5 VAC or 28 VDC $6,020*	

NAVIGATION RECEIVERS (PANEL- AND REMOTE-MOUNT)

Manufacturer	Model / TSO	Channel Display / Channel Storage	Nav Outputs / GS/MB	Units/Weight (lb) / Size or Form Factor	Price / Power Required	Remarks
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**Bendix/King** **KN 53**	gas discharge	CDI	1/3.0	$6,379, Silver Crown Plus; $6,209, Silver Crown	Displays both active and preset frequency.
	C34c, C36c, C40a	2 nav; nvm	GS only	6.31 x 1.3 x 9.75	11-33 VDC	
	Bendix/King **KNR 634A**	gas discharge	ARINC 429 CDI, HSI, RMI	2/6.5	$37,734	Synchro-interface KNI 582 RMI optional. Digital display of active/standby frequencies.
	C40a, C36c, C34c, C35d	2 nav; nvm		3.0 x 5.0 x 10.0	28 VDC	
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 **www.rockwellcollins.com**	**VIR-4000**	CTL-32 gas discharge	CSDB ARINC 429	2/3.9	see remarks	Special order item and pricing. Combines ADF and VOR/ILS/MKR receivers in a single package. Internal diagnostics capability.
	C34e, C36e, C40c, C35d	6 frequencies; nvm	N/A	2.5 MCU	28 VDC	
	NAV-4500	CTL-32 gas discharge	CSDB ARINC 429	2/4.1	$23,560*	Built-in diagnostics; compatible only with CSDB or ARINC 429 controls; digital signal processing; includes CTL-32 ($4,904); meets Eurocontrol FM immunity standards only. RTU 4200, $23,880. **BCA* estimate.
	C34e, C36e, C40c, C35d	6 frequencies; nvm	N/A	2.5 MCU	28 VDC	
	VIR 32	CTL-32 gas discharge	SIN/COS serial digital; RMI compatible	2/5.7	$28,400*	Replaces VIR-30A directly; includes serial digital control; digital signal processing; built-in diagnostics; rotor modulation filter optional (strap). Includes CTL-32. Meets FM immunity requirements. **Other configurations will determine final price.*
	C34c, C35d, C36d, C40b	6 frequencies; nvm		⅜ ATR-SL	28 VDC, 26 VAC, 400 Hz	
	VIR 432	CTL-32 gas discharge	serial digital	2/5.7	$31,896*	Built-in diagnostics; compatible only with CSDB or ARINC 429 controls; includes CSDB control, digital signal processing. Includes CTL-32. Meets Eurocontrol FM immunity requirements. **Other configurations will determine final price.*
	C34d, C35d, C36d	6 frequencies; nvm		⅜ ATR-SL	28 VDC, 26 VAC, 400 Hz	
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 **www.rockwellcollins.com**	**NAV-4000**	CTL-32 gas discharge	CSDB ARINC 429	2/4.7	$32,532*	Built-in ADF; built-in diagnostics; compatible only with CSDB or ARINC 429 controls; digital signal processing; meets Eurocontrol FM immunity standards. **Configuration will determine price.*
	C34e, C36e, C40c, C35d, C41d	6 frequencies; nvm	N/A	2.5 MCU	28 VDC	

NAVIGATION RECEIVERS (PANEL- AND REMOTE-MOUNT)

Manufacturer	Model / TSO	Channel Display / Channel Storage	Nav Outputs / GS/MB	Units/Weight (lb) / Size or Form Factor	Price / Power Required	Remarks
Cobham Electronics 6400 Wilkinson Dr. Prescott, AZ 86301 (928) 708-1550 (928) 541-7627 **www.wulfsberg.com**	**CVN-251**	108.0-117.95 MHz	ARINC 429 SIN/COS	1/3.31 4.0 x 2.4 x 13.33	$23,200*	ARINC 429 bus interface; 160 VOR channels; 40 LOC channels; includes glideslope/marker beacon receivers. FM immunity standard. **BCA* estimate.
	C40c, C36e, C34c, C35d	LCD		1/0.75 2.5 x 3.15 x 4.29	18-33 VDC	
	CVC-152 Control Display	108.0-117.95 MHz	ARINC 429 SIN/COS	1/3.31 4.0 x 2.4 x 13.33	$4,890*	Combines comm and nav tuning; gray or black panel. **BCA* estimate.
		LCD		1/0.75 2.5 x 3.15 x 4.29	5 VDC, 5 VAC or 28 VDC	
	CCN-955	108.0-117.95 MHz	ARINC 429 SIN/COS	1/3.31 4.0 x 2.4 x 13.33	$9,540*	Combines comm and nav tuning. **BCA* estimate.
		LCD		1/0.75 2.5 x 3.15 x 4.29	5 VDC, 5 VAC or 28 VDC	

DISTANCE MEASURING EQUIPMENT

Manufacturer	Model / TSO	Channel Display	Nav Outputs / Power Outputs (peak W)	Units/Weight (lb.) / Size or Form Factor	Price / Power Required	Remarks
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**Bendix/King KN62A**	gas discharge	serial data	1/2.6 P/M	$8,587	Includes antenna and installation kit; accepts remote channeling. Distance accuracy: ±0.1 nm nominal to 99 nm, ±1.0 nm, 100 to 389 nm.
			100	6.3 x 1.3 x 12.3	11-33 VDC	
	Bendix/King KN63	gas discharge	serial data	2/3.6	$13,419	Includes KDI 572 indicator, optional slaved indicator. Distance accuracy: ±0.1 nm nominal to 99 nm, ±1.0 nm, 100 to 389 nm.
	C66a		100	6.5 x 1.1 x 11.55	11-33 VDC	
	Bendix/King KDM 706A	gas discharge, slaved indicators	ARINC 429 ARINC 568	2/6.3	$24093	Includes KDI 572 indicator; optional slaved indicator; kits/mounts not included.
	C66b		250	3.0 x 5.25 x 12.8	28 VDC	
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 **www.rockwellcollins.com**	**DME-42**	gas discharge, serial digital 2 x 5 tuning	ARINC 568 serial digital	2/6.2	$18,896*	Includes two-digit-code diagnostics; directly replaces DME-40; tracks three channels simultaneously when used with CTL-32 and IND-42A (special order only) (CTL-32 controls nav receiver); digital signal processing; echo monitor. IND-42A indicator included. Displays 0-300 nm; 0-999 knots; 0-120 min. **BCA* estimate.
	C66b		300	1/2 ATR-SL	28 VDC	
	DME-442	gas discharge	ARINC 568 serial digital (CSDB) ARINC 429	2/6.2	$22,156*	Tracks three channels simultaneously when linked to CTL-32, IND-42A; decodes and displays station ident; digital signal processing; echo monitor; built-in diagnostics; includes IND-42A (special order only). **BCA* estimate.
	C66b		300	1/2 ATR-SL	28 VDC	
	DME-4000	gas discharge	CSDB ARINC 429	2/4.4	$20,100*	Tracks three channels simultaneously when linked to CTL-32, IND-42; decodes and displays station ident; digital signal processing; echo monitor; built-in diagnostics; includes IND-42. **BCA* estimate.
	C66c		300	2.5 MCU	28 VDC	
Cobham Electronics 6400 Wilkinson Dr. Prescott, AZ 86301 (928) 708-1550 (928) 541-7627 **www.wulfsberg.com**	**CDM-451 FliteLine**	LCD	3 ARINC 429 2 ARINC 568 1 40-bit serial	1/3.6	$24,500*	Three-channel scanning. ARINC 429 interface; nav frequency display in DME hold mode; six-wire analog continuous self-test. SD-442B display, $7,630. Available with NVG option. **BCA* estimate.
	C66c		325	3.87 x 3.27 x 13.33	18-33 VDC	

LONG-RANGE NAVIGATION NAV/COMS

Manufacturer	Model / System Type / TSO	Inputs / Outputs	Units/Weight (lb.) / Size or Form Factor	Price / Power Required	Remarks
Avidyne 55 Old Bedford Rd. Lincoln, MA 01773 (781)402-7400 (800) AVIDYNE Fax: (781) 402-7599 **www.avidyne.com**	**IFD 540** GPS receiver with WASS (SBAS) capability, VOR/ILSs/LOC receiver, VHF com C34e, C36e, C40c, C110a, C113, C118, C146c, C147, C151b, C157, C165, C169a	VHF Com; VOR-LOC-ILS; GPS SBAS-WAAS —	1/7.2 1.95 x 6.3 x 1.3	$16,995 28 VDC 10-watt VHF Com (16-watt option available)	Designed as a drop-in replacement for the GNS 530 and 530W navigators, but with a larger display and touch-screen interface. 5.7-in. VGA (640 x 480) LED. 16 channel GPS/SBAS receiver with 1,000 user-defined waypoints/99 flightplans. Optional TAWS-B, $7,995; optional 16 W VHF transceiver, $4,995.
Esterline CMC Electronics 600 Dr. Frrederik Philips Blvd. Montreal, Quebec Canada H4M 259 (514) 748-3184 Fax: (514) 748-3100 **www.cmcelectronics.ca**	**CAM-5024 GLSSU** GPS receiver with SBAS and LPV C145b Beta-3 C146b Delta-4	ARINC 429 (complies with ARINC 743A)/ ARINC 429 ARINC 429	1/5.5 N/A	$20,000 28 VDC	Standalone LPV solution with CMA-5025 control head; no FMS or EFIS modification required.
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**Laseref V Micro IRS** Laser Gyro IRS C4c, C5e, C6d	ARINC 429 ARINC 429	2/9.9 6.6 x 6.4 x 6.3	$252,531 28 VDC	All digital; passive cooling; automatic mode control; align-in-motion when supplied with ARINC 743A GPS imputs.
	GR-550 GPS sensor C-129 B1/C1	ARINC 429 ARINC 429 (ARINC 743A)	1/6.0 2.6 x 8.5 x 9.5	$44,633 28 VDC 115 VAC	Complies with ARINC 743A; integral satcom filter, 24 channels.
	Laseref IV Laser Gyro IRS C4c, C5e, C6d	ARINC 419/429 ARINC 429/ASCB	2/16.9 4.9 x 7.6 x 13.1	$332,350 28 VDC or 115 VAC	All digital; 4 MCU ARINC 704.
	Special Missions Laseref V N/A N/A	ARINC 429 ARINC 429	2/9.9 6.6 x 6.4 x 6.3	$301,634 28 VDC	
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 **www.rockwellcollins.com**	**GPS-4000S** GPS receiver w SBAS (WAAS) capability C145A Class Beta-3	ARINC 429 (complies with ARINC 743A) ARINC 429	N/A 2 MCU	$32,576* 28 VDC	**BCA* estimate.

TRANSPONDERS

Manufacturer	Model TSO	Modes Power Output (W)	Units/Weight (lb.) Size or Form Factor	Price Power Required	Remarks
ACSS, an L-3 Communications and Thales Company 19810 N. 7th Ave. Phoenix. AZ 85027 (623) 445-7001 **www.acss.com**	**Mode S RCZ-852**	TCAS/Mode S/Fit ID control panel; RMU (Primus II radios)	5.0	$53,226	Elementary and Enhanced Surveillance (ELS/EHS) and DO 260 compliant. Certified on many regional and business jets.
	C112	CTL92A/T/E	3.5 x 4.2 x 14.1		
	Mode S ATDL XS-950	TCAS/Mode S/Fit ID control panel; CTL92A/T/E	1/11.5	$84,458	DO 260B compliant. Elementary and enhanced surveilance (ELLS/EHS). Certified on many business jet and air transport category aircraft.
	C112		4 MCU	N/A	
Avidyne Corp. 55 Old Bedford Rd. Lincoln, MA 01773 (781) 402-7400 (800) AVIDYNE Fax: (781) 402-7599 Info @avidyne.com **www.avidyne.com**	**AXP340**	Mode A/C/S with extended squitter; ADS-B OUT	1/2.98	$5,995	Panel-mounted Class 1 Mode S Level 2 data-link transponder, with support for 1090 MHz Extended Squitter (ES), that meets all the current requirements for Mode S elementary surveillance transponders. Developed as a slide-in replacement for existing KT76A/KT78A transponders, the AXP340 is designed to easily upgrade existing Mode A/C equipment to Mode S, while adding additional functionality like a direct-entry numeric keypad, pressure altitude and GPS Lat/Lon readout, Flight ID entry, one-touch VFR code entry, a stop watch timer/flight timer, and altitude alerter. Supports the latest Version 2 1090 MHz Automatic Dependent Surveillance Broadcast (ADS-B) Extended Squitter (ADS-B out).
	C166b, ETSO 2C112b, ETSO C166b	240	6.3 x 1.57 x 9.4	10 -33 VDC	
Garmin International 1200 E. 151st St. Olathe, KS 66062 (800) 800-1020 (913) 397-8200 Fax: (913) 397-8282 **www.garmin.com**	**GTX 330**	A, C, S	1/3.0	$4,995	Solid-state Mode-S, keypad entry, remote ident, pressure altitude, density altitude and OAT display, front-panel entry for flight ident, altitude monitor with voice alert, flight timers. TIS compatible in the United States.
	C112 CC166a, Class 2A	250	1.6 x 6.25	11-33 VDC	
	GTX 330D	A, C, S	1/3.0	$9,995	Diversity Mode-S, solid-state keypad entry, remote ident, front panel entry for flight ident, altitude monitor with voice alert, flight timers. TIS compatible in the United States.
	C112 Class 2A	250	1.6 x 6.25 x 9.75	11-33 VDC	
	GTX 327	A, c	1/3.1	$2,665	Panel mount Mode-C, solid-state keypad entry; dedicated pushbutton keys for squawk code selection; dedicated VFR squawk key and pilot selectable data field.
	C74c, Class 1A	200	6.25 x 1/65 x 8.73	11-22 VDC	
	GTX 33	A, C	1/2.2	$2,645	Remote mount, solid-state, remote ident capability, flight timers.
	C74c, Class 1A	200	1.71 x 6.30 x 8.78	11-33 VDC	
	GTX 327	A, C	1/3.1	$2,665	Panel-mount Mode C, solid-state, keypad entry, dedicated pushbutton keys for squawk code selection, dedicated VFR squawk key and pilot selectable data field.
	C74c, Class 1A	200	6.25. x 1.65 x 8.73	11-22 VDC	

TRANSPONDERS

Manufacturer	Model TSO	Modes Power Output (W)	Units/Weight (lb.) Size or Form Factor	Price Power Required	Remarks
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**Bendix/King KT 76A**	A, C	1/3.1	$2,265	Automatic reply-light dimmer; system test; remote ident capability adapter available.
	C47c; Class 1B	250	6.25 x 1.6 x 10.0	14 or 28 VDC	
	Bendix/King KT 76C	A, C	1/3.1	$3,122	Slide-in replacement for KT 76A. Programmable VFR code; remote ident capability; gas-discharge digital display; pushbutton code entry.
	C47c	250	6.25 x 1.63 x 10.73	11-33 VDC	
	Bendix/King KT 73	A, C, S, TIS	1/3.6	$6,399	Mode S data link with TIS. Meets European Elementary Surveillance mandate (non-diversity).
	C112	200	6.25 x 1.63 x 10.82	10-32 VDC	
	Bendix/King KT 70	A, C, S	1/3.9	$6,958	Mode S transponder; non-diversity surveillance only; includes discrete address memory module; displays encoding altimeter output; gas discharge display.
	C112; Class 1A	250	6.25 x 1.63 x 10.0	11-33 VDC	
	Bendix/King MST 67A	A, C, S	2/8.5	$43,365	Mode S diversity transponder.
	C37c/C38c C74c; Class 3A	250-625	14.0 x 3.0 x 8.9	115 VAC; 400 Hz	
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 **www.rockwellcollins.com**	**TDR-94D**	S	2/9.7	$335,068*	Mode S transponder; European Elementary and Enhanced Surveillance compliant. Compatible with TCAS II Change 6.04 and Change 7.0 systems. DO-260A ADS-B trasmit compliant. Includes CTL-92E flight ID capable control panel. **BCA* estimate.
	C112; Class 3	250-625	4.9 x 3.3 x 12.5	28 VDC	

WEATHER RADAR

Manufacturer	Model / TSO / Circuits	Ranges / Power Output (Peak KW)	Dish Size & Beam Width (in./deg.)	Scan / Pulse Width / Looks/Min.	Stablztn. / Stabl. Sig. / Ant. Tilt	Display Interface / Colors	Scope (dia./in.) / Indicator Size	Units/ Weight / RT. Size	Price / Power	Remarks
Garmin International 1200 E. 151st St. Olathe, KS 66062 (800) 800-1020 (913) 397-8200 Fax: (913) 397-8282 **www.garmin.com**	**GWX 68**	Selectable 2.5, 5, 10, 20, 40, 80, 160 and 320 nm (MX 20; GMX 200)	10/9 12/7.8	20, 40, 60 or 90° (G1000)	±30°	Garmin HSDB and ARINC 429/ 453	N/A	12 in./ 9.1 10 in./ 9.0	$21,995 (12 in.) $20,995 (10 in.)	Vertical scan feature: looks horizontally or vertically on bearing line selected by pilot. WATCH feature identifies the shadowing effects of short range cell activity; Automatic Target Alert feature looks ahead for intense cell activity in 80-320 nm range.
	C63c			20 or 90° (MX 20 and GMX 200)	30-220 mV/ degree ARINC 429 HSDB					
	Vertical scan, ext. STC, WX alert, atten. comp., variable gain - WX and map modes, WATCH	7kW		1 & 4 micro-seconds	±15°	4	6 in. & 10 in. diag.	Width: 10.0 in. Depth: 6.3 in.	4/28 VDC, 60 W 8-28 VAC 400 Hz	
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**Bendix/King ART 2000**	10, 20, 40, 80, 160	10/10 12/8 15	90° or 100°	30°	KMD 850 EFIS	N/A	1/9.9	$22,682	Vertical profile feature: scans horizontally or vertically on track line selected by pilot. Alpha-numeric display of range, function and tilt angle.
	C63c	4		4	20-220 mv/det.	4	N/A	10.28 dia.	28 VDC; 10, 26, 115 VAC, 400 Hz	
	Vertical profile, ext. STC, tgt., wx alert, atten., comp., variable gain-map mode			ARINC 429	±15°					
	Bendix/King RDR 2100	5, 10, 20, 40, 80, 160, 240, 320	12/8 10/10	90°, 100°, 120°	±30° pitch & roll	KMD 850 EFIS	N/A	1/9.9	$42,186	Vertical profile feature: scans horizontally or vertically on track line selected by pilot; Alpha-numeric display of range, function and tilt angle. KMD 850 MFD, $13,440.
	C63c	6.0		range dependent	20/220 mv/deg. ARINC 429	5	N/A	10.28 dia.	28 VDC; 10, 26, 115 VAC, 400 Hz	
	Vertical profile; extended STC; wx attenuation compensation; variable gain in map mode; wx alert; autotilt			15	±15°					
	Primus 660	2.5, 5, 10, 25, 50, 100, 200, 300	12/7.9 18/5.6	60° or 120°	±30°	ARINC 453/708 checklist, data nav, EFIS, MFD, LSZ-860	4	2/15.8	$78,472	Single receiver/transmit-ter/antenna pedestal.
	C83c			2	50 or 200 mv/deg. or ARINC 429					
	REACT; GMAP target alert, preset & variable gain	10		12/24	±15°	4	4.81 x 6.25 x 12.24	5.0 x 7.6 x 15.0	28 VDC	
	Primus 880	2.5, 5, 10, 25, 50, 100, 200, 300	12/7.9 18/5.6 24/4	60° or 120°	±30°	ARINC 453/708 checklist, data nav, EFIS, MFD, LSZ-860	5	2/15.8	$120,129	Single receiver/transmit-ter/antenna pedestal.
	C63c			2	50 or 200 mv/deg. or ARINC 429					
	Doppler turb. detec., compensated, tilt, RE-ACT, GMAP target alert, preset & variable gain	10		12/24	±15°	5	4.8 x 6.25 x 12.24	5.0 x 7.6 x 15.0	28 VDC	
	Primus 700A	½, 1, 2.5, 5, 10, 25, 50, 100, 200, 300	10/10, 12/7.9, 10 x 14/ 10 x 7.1, 18/5.6, 24/4	60° or 120°	±30	ARINC 429/708 checklist, data nav, EFIS, lightning sensor LSZ-860	5	4/37	$175,366	Short-range and high resolution system for special search and surveillance missions, displayed menus. Mini-mum detect range at 450 ft. Allows full dual-mode operation for pilot and copilot. Price reflects typical system.
	C63c			6	50 or 200 mv/deg. or ARINC 429					
	REACT; ground & sea clutter red.; turb. detect-preset & variable gain	10		12/24	±15°	5	4.81 x 6.25 x 12.24	5.0 x 7.6 x 15.0	28 VDC; 400 Hz	

WEATHER RADAR

Manufacturer	Model / TSO / Circuits	Ranges / Power Output (Peak KW)	Dish Size & Beam Width (in./deg.)	Scan / Pulse Width / Looks/Min.	Stablztn. / Stabl. Sig. / Ant. Tilt	Display Interface / Colors	Scope (dia./in.) / Indicator Size	Units/ Weight / RT. Size	Price / Power	Remarks
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**Primus 701A**	½, 1, 2.5, 5, 10, 25, 50, 100, 200, 300	10/10, 12/7.9, 10 x 14/ 10 x 7.1, 18/5.6, 24/4	60° or 120°	±30°	ARINC 429/709 checklist, data nav, EFIS, lightning sensor	5	4/39	$188,164	Short-range and high-resolution system for special search and surviellance missions; displayed menus and AC 90-80A specified clear zones. Allows full dual-mode operation for pilot and copilot. Price reflects typical system.
	C63c, C102			6	50 or 200 mv/deg. or ARINC 429					
	REACT; ground clutter reduction; turbulence detect-preset & variable gain	10		12/24	±15°	6	4.81 x 6.25 x 12.24	5.0 x 7.6 x 15.0	28 VDC; 115 VAC, 400 Hz	
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 **www.rockwellcollins.com**	**RTA-4112**	5-320 nm	12/8	60°	±15° tilt	ARINC 708A	N/A	1/15.1	$175,720	
	C63c			3.44-55usec	—					
	—	38-75 W		—	—	4	—	12 in.	80 W avg.	
	RTS-4114	5-320 nm	14/6.7	60°	±15° tilt	ARINC 708A	N/A	1/15.4	$178,784	
	C63c			3.44-55usec	—					
	—	38-75 W		13	—	4	varies by indicator	14.0	80 W avg.	
	RTS-4118	5-320 nm	18/5.2	60°	±15° tilt	ARINC 708A 950	N/A	1/17.0		
	C63c			3.44-55usec	—					
	—	38-75 W		—	—	4	—	18.0	80 W avg.	

RADAR ALTIMETERS

Manufacturer	Model / TSO	Alt. Range / Pitch/Roll Limits	Accuracy	Display	Units/ Weight (lb.)	Price / Power Required	Remarks
FreeFlight Systems 3700 Interstate 35 S. Waco, TX 76706 (254) 662-0000 Fax: (254-662-9450 www.freeflightsystems.com	**RA-4000 and RA-4500**	-20-2,500 ft.	0 to 100 ft. ±3 ft. 100 to 500 ft. ±3% 500 to 2,000 ft. ±5%	RAD-40 Radar Altimeter display compatible with the RA-4000 and RA-4500	2/2.27	N/A	RA-4000 provides RS 485/422 and RS 232C outputs; RA-4500 provides ARINC 429, RS 485/422 and RS 232 outputs. Two-year warranty. Optional night vision goggle (NVG) compatible display and round faceplate adapter for display. Optional 1/2 ATI (TSO'd) RAD-40 indicator, $3,055; when purchased with RA-4000, $11,190. RAD-40/RA 4500 w/installation kit, $12,699.
	C87	±20°/±30°				28 VDC	
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 www.honeywell.com	**Bendix/King KRA 405B**	-20-2,000 ft.	0-100 ft, 34 ft or 3%, whichever is greater; 500-2,500 ft., ±5%	pointer dial	2/10.7	$28,649	Compatible with Honeywell Mark VI GPWS/EGPWS continuous DH set; tracking to 2,500 feet; expanded helicopter version available; night-vision goggle version available. Optional built-in tone generator.
	C87	±20°/±25°				28 VDC	
	AA-300	0-2,500 ft.	0-100 ft., ±3 ft; 100-500 ft, ±3%; 500-2,000 ft., ±4%	pointer dial	2/6.5	$44,949	Price includes RT300 radio altimeter and RA-315 indicator.
	C87	±20°/±30°				28 VDC	
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 www.rockwellcollins.com	**ALT-1000**	0-2,500 ft	±2 ft or 2%	Analog only outputs*	2/6.8	$17,988	*Requires separate converter for use with ARINC 429 systems.
	C87	±40°/±50°				28 VDC	
	ALT-4000	0-2,500 ft.	±2 ft or 2%	EFIS (analog version available)	2/6.8	$30,728	Interfaces to EFIS high-intensity monitor for Cat II/III certification. Includes two ANT-52 antennas.
	C87	±40°/±50°				28 VDC	

THUNDERSTORM DETECTION SYSTEMS

Manufacturer	Model TSO	Search Arc Max Range	Information Display	Display Size Units/Weight	Price Power Required	Remarks
Avidyne Corp. 1944 East Sky Old Bedford Rd. Lincoln, MA 01733 (781) 402-7400 Faz: (781)402-7599 **www.avidyne.com** info@avidyne.com	**TWX670**	N/A	lightning strikes are displayed with range bearing and intensity (color). TWXCell mode highlights the most intense regions of thunderstorm activity, presenting a visually contoured color display with dynamic sectors.	see Avidyne MHD300, EX500 specifications. 7 each RS 323 outputs. Also compatible for monochrome strikes on many legacy RS 232-capable lightning detection system displays.	$7,995	Third-generation lightning detection system with digital signal processing and noise immunity. Shows lightning from 0 nm - 200 nm including critical 0 nm - 25 nm range for addded tactical benefit. Eliminates radial spread associated with older technology systems. Exclusive TWXCell display provides a dynamic map of the lightning discharge rate and density.
	C110	200 nm			16-35 VDC	
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 www.honeywell.com	**LSZ-860**	60°, 120°, 360°	three unique symbols represent three rates of occurence for vertical lightning in a specific area	displays on Honeywell EFIS of various sizes	$34,110	Price shown is for typical system.
	C110	100 nm		2/6.5	28 VDC	
L-3 Avionics Systems 5353 52nd St. S.E. Grand Rapids, MI 45912 (616) 949-6600 Fax: (616) 285-4224 **www.L-3avionics.com**	**WX-500**	pilot-selectable 120° & 360°	graphical depiction of real-time lightning information in cell or strike modes	see remarks 2.5	$7,130*	Remote-mount sensor interfaces with MFDs for graphical depiction of real-time lightning information Features 360° and 120° views, selectable ranges of 25-200 nm, input for heading stabilzation and options for cell or strike mode data selection. Interfaces to MFDs via RS-422. A seaparate radar graphics computer (Model RGC-350) is needed for display on dedicated radar indicators. *Processor only.
	C110a	200 nm		Processor: 5.6 x 2.2 12.0	11-32 VDC	
	WX-1000+ AN/AMS-2	360°	CRT	3 ATI	$18,060	Includes WX-1000+ processor and monochrome CRT display. Features include 360° and 120° viewing modes, six programmable checklists, selectable ranges to 200 nm, and can be heading stabilized with gyro input.
	C110A	200 nm		3/10.95	10-32 VDC	
L-3 Avionics Systems 5353 52nd St. S.E. Grand Rapids, MI 49588 (616) 949-6600 Fax: (616) 285-4224 **www.L-3com.com**	**WX-1000+ AN/AMS-2**	360°	CRT	3 ATI	$18,060	Includes WX-1000+ processor and monochrome CRT display. Features include 360° and 120° viewing modes, six programmable checklists, selectable ranges to 200 nm, and can be heading stabilized with gyro input.
	C110A	200 nm		3/10.95	10-32 VDC	
	WX-1000E (429 EFIS)	360°	—	depends on EFIS system	$18,200*	Provides output on EFIS display or radar indicator when paired with RGC35C (sold separately); includes three levels of activity, bearing and distance; optional displays for checklists. *Processor only. Price BCA estimate.
	C110a	200 nm		1/6.67	10-32 VDC	
	WX-1000E (429 Navaid)	360°	—	3 ATI	$23,710	Fatures Arinc 429 interface to allow simultaneous display of thunderstorn information and course line to waypoints. Presentation of six user-selectable navigation items. Course deviation indicator (CDI) display. Consult manufacturer for approved interfaces.
	C110a	200 nm		2/10.95	10-32 VDC	

BASIC AUTOPILOTS

Manufacturer	Model / TSO	Sensor Type / Servo Type	Attitude Modes: Roll / Pitch	Nav Modes	Units/ Weight (lb.)	Price / Power Required	Remarks
Cobham (S-TEC) One S-TEC Way Municipal Airport Mineral Wells, TX 76067 (817) 215-7600 Fax: (940) 325-3904 **www.s-tec.com**	**S-TEC System ThirtyALT**	accelerometer	none	none	3/4.0	$7,365	
	C9c	DC electric	altitude hold			14 or 28 VDC	
	S-TEC System Forty	1 rate gyro	command turn	VOR/LOC/BC, GPS tracking	3/9.0	$8,820	Can be upgraded to System 50 or 60-2.
	C9c	DC electric	none			14 or 28 VDC	
	S-TEC System Twenty	enclosed in rate gyro	command turn	VOR/LOC, GPS tracking	2/7.0	$8,644	Can be upgraded to System 30.
	C9c	DC electric	none			14 or 28 VDC	
	S-TEC System 60-1	1 rate gyro	hdg. select	VOR/LOC/BC, GPS/Loran capture and tracking	4/12.0	$10,694	Includes interfaces with all popular HSIs. Variable bank angle with airspeed; automatic three-level radio gain; can upgrade to 60-2.
	C9c	DC electric	none			14 or 28 VDC	
	S-TEC System 60 PSS	no external sensors	none	GS capture and track	4/11.0	$11,091	Complements existing single roll-axis autopilot; auto/manual, electric trim optional, $2,195; may be upgraded to 60-2; altitude selector/alerter optional, $3,670.
	C9c	DC electric	vertical speed hold; altitude hold; GS capture and track			14 or 28 VDC	
	S-TEC System Fifty	1 rate gyro	command turn/hdg. select optional	VOR/LOC/BC, GPS, Loran tracking	5/14.0	$14,134	Two-axis, roll and pitch autopilot; trim condition indicator std. Manual electric trim optional, $2,630. Can be upgraded to 60-2.
	C9c	DC electric	altitude hold			14 or 28 VDC	
	S-TEC System Thirty	enclosed in rate gyro plus pitch computer	command turn	VOR/LOC/GPS/ Loran tracking	5/13.0	$13,759	DG option, $2,495
	C9c	DC electric	altitude hold			14 or 28 VDC	
	S-TEC System 60-2	1 turn coord., 1 dir. gyro	hdg. select	VOR/LOC/BC, Loran track and approach; GS capture and tracking	7/21.0	$18,919	Interfaces with all popular HSIs. Automatic/manual electric trim optional, $3,520; altitude/vertical speed selector/alerter optional, $3,670; can be upgraded to flight director.
	C9c	1 press. transducer	vertical speed and altitude hold			14 or 28 VDC	
	S-TEC System FiftyFiveX	1 turn coord.	hdg. select	VOR/LOC/BC, GPS/Loran tracking and GS capture	5/17.0	$22,993	Interfaces with all popular HSIs. Automatic/manual electric trim optional, $3,520. Altitude/vertical speed selector/alerter optional, $3,670; can be upgraded to flight director.
	C9c	1 press. transducer	digital vertical speed, altitude hold			14 or 28 VDC	
	S-TEC System 65	1 turn coord., 1 dir. gyro	hdg. select	VOR/LOC/BC, GPS/Loran capture and tracking; GS capture and tracking	9/24.0	$42,887	
	C9c	1 press. transducer	manual and auto. modes			14 or 28 VDC	

INTEGRATED FLIGHT CONTROL SYSTEMS

Manufacturer	Model	Air Data	Autopilot	Power	*Weight*	*Price*	Remarks
					AP Only	AP Only	
		Attitude Sensors	Flight Director		IFCS	IFCS	
Garmin International 1200 E. 151st St. Olathe, KS 66062 (800) 800-1020 (913) 397-8200 Fax: (913) 397-8282 **www.garmin.com**	**GFC 700**	GDC 74 (B) DADC	combined	28 VDC	varies by installation	varies by installation	Digital, dual-channel fail-passive system for Cessna Mustang, Caravan, C-172, -182, -206, -350 and -400; Cirrus SR20 and SR22; Diamond DA40; DA42; Embraer Phenom 100 and 300; HBC G36 and G58; Mooney M20R and M20S; Socata TBM 850 and HondaJet.
		GRS 77 AHRS					
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**Primus 1000** (in remarks)	micro DADC	IC-600	28 VDC	varies by installation	varies by version	Digital fail-passive system. CAT II-capable; ARINC 429 interfaces, two-, three-, four- or five-tube, 8 in. x 7 in. EFIS. Bombardier Learjet 40, 45 and 45XR; Embraer ERJ-135, 140 and 145; Cessna Bravo, Encore, Excel and Ultra.
		digital AHRS or IRS	combined		varies by installation	varies by version	
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 **www.honeywell.com**	**Primus 1000 CDS**	micro DADC	IC-615	28 VDC	varies by installation	varies by installation	Digital fail-passive system. CAT II-capable; ARINC 429 interfaces; two- to five-tube 10 in. x 8 in. LCD EFIS. Cessna Citation XLS.
		digital AHARS	combined		varies by installation	varies by installation	
	Primus 2000	micro DADC	IC-800	28 VDC	varies by installation	varies by version	Digital, dual-channel fail-passive system. CAT II-capable w/optional auto-throttle, dual-sensor monitoring; five- or six-tube 8 in. x 7 in. CRT EFIS. Global Express and Global 5000; Cessna Citation X; Dassault Falcon 900EX/C.
		digital AHRS or IRS	combined		varies by installation	varies by version	
	Primus Epic CDS	micro DADC	FZ-800	28 VDC	varies by installation	varies by installation	Digital fail-passive system. CAT II-capable, ARINC 429 interfaces. Two-, three-, four- or five-tube 10 in. x 8 in. EFIS. SyberJet SJ30-2.
		digital AHRS or IRS	combined		varies by installation	varies by installation	
	Primus Epic	air data module and micro IRS	integrated modular avionics unit	28 VDC	varies by installation	varies by installation	Integrates all traditional avionics into modular avionics unit. Digital, dual-channel; fail operational system. CAT II-capable w/ optional auto-throttle and envelope protection. Includes two- to five-tube 10 in. x 8 in. LCD EFIS or four 13 in. LCDs. Agusta/Bell AB139; Citation Sovereign; Dassault Falcon 900EX, 2000EX and 7X; Embraer 170, 175, 190 and 195; Gulfstream G350, G450, G500 and G550; Hawker 4000.
		air data module and micro IRS			varies by installation	varies by installation	
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 **www.rockwellcollins.com**	**APS 4000**	ADC-3000/3010 AHC-3000/4000	integrated	28 VDC	varies by installation	varies by installation	Available only as part of integrated Pro Line 21 system. Built-in diagnostics, dual channel, fail-passive, digital CAT-II certificated autopilot and flight director.
		—	—		varies by installation	see remarks	
	APS-65	AHC-3000	APS-65	28 VDC	varies by installation	varies by installation	Built-in diagnostics; digital Cat II certificated autopilot. Optional EFIS and AHRS. STC kit installer fabricated. Compatible with EFIS-84. **Typical configuration, $155,976.*
		remote vertical gyro or dual AHRS	EFIS-84 (two tube)		50.6	*	
	APS-85	ADS-86	APS-85	28 VDC, 115 VAC, 400 Hz	varies by installation	varies by installation	Available only as full, dual-channel, fail-passive, digital system; digital Cat II autopilot, 4- or 5-tube EFIS optional; ARINC 429 IRS interface available; includes yaw damper; extensive built-in diagnostics. STC kit installer fabricated. Compatible with EFIS-84. **Typical configuration, $290,388.*
		dual AHRS AHC-3000	EFIS-85 (three tube)		varies by installation	*	
Cobham (S-TEC) One S-TEC Way Municipal Airport Mineral Wells, TX 76067 (817)215-7600 **www.s-tec.com**	**IntelliFlight DFCS**	digital ADAHARS	Magic EFIS	14 or 28 VDC	14.5	see remarks	Dual-side EFIS and 2100 DFCS autopilot, $146,700*. Single-side EFIS and 2100 DFCS autopilot, $119,800*. **BCA estimate.*
			N/A		N/A		

COLLISION AVOIDANCE SYSTEMS

Manufacturer	Model TSO	Display Interface Options	Processor Size Weight (lb)	Price	Remarks
ACSS an L-3 Communications & Thales Company 19810 N. 7th Ave. Phoenix, AZ 85023 (623) 445-7000 Fax: (623) 445-7001 **www.acss.com**	**TAWS+** C151B Class A, C129b2	MFD, EFIS, Weather Radar Display	2 MCU 1/7.5	$120,666 (with GPS) $107,171 (without GPS)	Terrain Advisory Line and Avoid Terrain feature. With GPS version alerts based on aircraft climb capability.
	TCAS 2000 RT-950/951 C119b	MDFD, EFIS, VSI/TCAS display	4 MCU - 14.7 6 MCU - 15.8	$199,756	Change 7.1 compliant. Standard positions on many regional and business jets. Bombardier, Cessna, Dassault, Embraer, Gulfstream, Hawker Beechcraft. (SFE selectable on all Airbus and Boeing aircraft.)
	TCAS 3000SP —	MFD, EFIS, Weather Radar Display	4 MCU - 13.85 6 MCU - 16.08 —	$218,948	Change 7.1 compliant. Flexible to add certified ADS-B in applications combined with TCAS.
	T²CAS C119b, C151b Class A, C129b2	MFD, EFIS, weather radar display VSI/ TCAS display	6 MCU - 15.8	$295,401	Combined TCAS and TAWS in one box. Change 7.1 compliant. ADS-B In/Out capable. Certified on Airbus A320 series.
Avidyne Corp. 55 Old Bedford Rd. Lincoln, MA 01773 (800) 284-3963 Fax: (614) 885-8307 **www.avidyne.com**	**TAS600** C-147	MFD, EFIS, weather displays, GPS map displays	7.25 x 11.67 x 3.10 8.71 (includes processor, dual antennas and coupler)	$8,495	Detects and interrogates other aircraft transponders within range, displaying the surrounding traffic on a host of compatible display systems and provides audible and visual alerts in the event of a potential traffic conflict. Provides 30-second decision time at a closure rate of up to 1,200 kt. Heads-Up Audible Position Alerting verbally indicates the conflicting aircraft's bearing, range and relative altitude for rapid visual acquisition of traffic. Includes Patented directional top and bottom antennas. Recommended for entry-level, single-engine piston aircraft. Features a 7-nm range, 3,500 ft. vertical separation maximum and 18,500-ft. service ceiling.
	TAS605 C-147	MFD, EFIS, weather displays, GPS map displays	7.25 x 11.67 x 3.10 8.71 (includes processor, dual antennas and coupler)	$10,495	Recommended for mid=performance aircraft and helicopters. Features 13-nm range, 5,500-ft. vertical separation maximum and a 55,000-ft. service ceiling. It accepts ARINC 429 heading input, permitting rapid repositioning of targets during high-rate turns.
	TAS615 C-147	MFD, EFIS, weather displays, GPS map displays	7.25 x 11.67 x 3.10 8.71 (includes processor, dual antennas and coupler)	$8,495	Recommended for high-performance aircraft and helicopters, the TAS615 features 17-m range, 10,000-ft. vertical separation maximum and 55,000-ft. service ceiling. It accepts ARINC 429 heading, permitting rapid repositions of targets during high-rate turns.
	TAS620 C-147	MFD, EFIS, weather displays, GPS map displays	7.25 x 11.67 x 3.10 8.71 (includes processor, dual antennas and coupler)	$20,990	Features 21-nm range, a 10,000-ft. vertical separation maximum and a 55,000-ft. service ceiling. Accepts ARINC 429 heading inut, permitting rapid repositioning of targets during high-rate turns.

COLLISION AVOIDANCE SYSTEMS

Manufacturer	Model TSO	Display Interface Options	Processor Size Weight (lb)	Price	Remarks
Garmin 1200 E. 151st. St. Olathe, KS 66062 (800)800-1020 (800)357-8200 Fax: (913) 397-8282 **www.garmin.com**	**HTAWS**	GNS 530 (W) series; SNS 430 (W) series	—	$9,995	Options feature for GNS 530/430 (W) Flight Management Systems for helicopters. Visual and aural warnings are provided to warn crew of potential CFIT hazards. Reduced Protection Mode (RP MOde) is available. Provides optional voice callouts (VCOs) when decending 500 feet and lower. Option available for remote mountable annunciation.
	C194		—		
	GTS 800	GNS 530 (W), GNS 500 (W), GNA 400 (W), GNS 420 (W), GNS 430 (W), G1000 Series, G900X Series, G600, G500 and select non-Garmin displays	6.25 x 2.7 x 12.7	$9,995	40-watt TAS suited to most light hleicopters and piston aircraft. FEatures GArmin's exclusive CLEAR CAS technology with up to 12 miles of active surveillance and ADS-B "in" capability.
	C147, C166a, DO-197A, DO-200A		LRU 9.0 vertical rack, 1.05; horizotal rack 1.94		
	TAWS	G1000 G900X GNS 530 (W) GPS 500 (W)	N/A	$10,000	GNS 500 Series navigation systems. Visual and aural warnings are provided to warn crew of potential CFIT hazards.
	C151a Class B		N/A		
	GTS 820	GNS 530 (W), GNS 500 (W), GNA 400 (W), GNS 420 (W), GNS 430 (W), G1000 Series, G900X Series, G600, G500 and select non-Garmin displays	6.25. x 2.7 x 12.7	$19,995	TAS traffic alerting for faster and higher-performing aircraft. Combines active/assive surveillance, 250-watt output (for up to 40 mi. of active surveillance), and Garmin CLEAR CAS with ADS-B "in" capability.
	C147, C166a, CO-197A, DO-200A		LRU: 9.0 vertical rack 1.05 horizontal rack 1.94		
	GTS 850	GNS 530 (W), GNS 500 (W), GNA 400 (W), GNS 420 (W), GNS 430 (W), G1000 Series, G900X Series, G600, G500 and select non-Garmin displays	6.25. x 2.7 x 12.7	$24,995	Satisfies all TCAS I collision avoidance criteria for higher-capacity turboprops and jets. Garmin CLEAR CAS enables both active and passive surveillance with 1090 MHz ADS-B "in" capability; 250 watts output.
	C118, C116a, DO-197A, DO-267A		vertical rack 1.05 horizontal rack 1.94		

COLLISION AVOIDANCE SYSTEMS

Manufacturer	Model TSO	Display Interface Options	Processor Size Weight (lb)	Price	Remarks
L-3 Avionics Systems 5353 52nd St. S.W. Grand Rapids, MI 49512 (616) 949-6600 Fax: (616) 285-4224 **www.L-3avionics.com**	**LandMark TAWS 8000**	TAWS compatible Arinc 453 EFIS, Arinc 453 weather radar indicators and compatible MFDs. Display on non-Arinc 453 radar indicators requires the RGC 350 Radar Graphics Computer (sold separately)	7.0 x 2.25 x 9.0	$12,230	Remote processor that offers predictive warning functions using position data from a GPS receiver, flight configuration and an internal terrain and obstacle database. Both aural and visual warnings are issued whenever CFIT situations arise. LandMark is designed to meet or exceed Class B requirements of TSO C151a. Baro-corrected altitude input required.
	C151a Class B		3.35		
	LandMark TAWS 8100	TAWS compatible Arinc 453 EFIS, Arinc 453 weather radar indicators and compatible MFDs. Display on non-Arinc 453 radar indicators requires the RGC 350 Radar Graphics Computer (sold separately)	7.0 x 2.25 x 9.0	$15,230	Features a WAAS GPS Sensor. With its accurate positioning information, the LandMark 8100 eliminates the need for multiple inputs from other aircraft sensors, simplifying the installation. The 8100 provides the highest integrity terrain data without complicated GPS, ADC or OAT inputs. 320 nm range.
	C151b Class B		3.40		
	SkyWatch SKY497	Displays on compatible EFIS and MFDs. Contact factory for list.	12.52 x 3.56 x 7.62	$15,990	(TAS) Active surveillance 11 nm, tracks up to 30 intruder aircraft and provides both aural and visual warnings. Verbal Intruder Positioning (VIP) announces range, bearing and relative altitude or intruder aircraft through cockpit's audio system. Single antenna system reduces installation costs and exceeds the performance of dual antenna systems. 5-yr. warranty.
	C147		LRU: 8.9 Antenna: 2.3		
	SkyWatch HP SKY899	Displays on compatible EFIS and MFDs. Contact factory for list.	12.52 x 3.56 x 7.62	$20,990	(TCAS-I) Active surveillance 35 nm, tracks up to 35 intruder aircraft and provides both aural and visual warnings. Verbal Intruder Positioning (VIP) announces range, bearing and relative altitude or intruder aircraft through cockpit's audio system. Single antenna system reduces installation costs and exceeds the performance of dual antenna systems. 5-yr. warranty.
	C147		LRU: 9.0 Antenna: 2.3		
	SkyWatch HP SKY899	Displays on compatible EFIS and MFDs. Contact factory for list.	12.52 x 3.56 x 7.62	$24,340	(TAS-I) Active surveillance 35 nm, tracks up to 35 intruder aircraft and provides both aural and visual warnings. Verbal Intruder Positioning (VIP) announces range, bearing and relative altitude or intruder aircraft through cockpit's audio system. Single antenna system reduces installation costs and exceeds the performance of dual antenna systems. 5-yr. warranty.
	C147, C118		LRU: 9.0 Antenna: 2.3		
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**Bendix/King KGP 560**	KMD 550 MFD, KMD 850 MFD and most MFDs	2.2 x 4.15 x 6.25	$12,038	EGPWS exceeds Class B requirements. Provides aural and visual warnings; Internal GPS; worldwide database by region.
	C151 Class B		1.5		
	KGP 860	KMD 550 MFD, KMD 850 MFD and most MFDs	2.2 x 4.15 x 6.25	$15,615	EGPWS exceeds Class B requirements. Provides aural and visual warnings; internal GPS; worldwide database by region. EFIS displays additional warning modes.
	C151 Class B		1.5		
	Mark XXI	KMD 550 MFD, KMD 850 MFD and most MFDs	4.5 x 7.0 x N/A	$19,011	Helicopter EGPWS.
	C118 Class B		1.5		
	Bendix/King KTA 870	KMD 550 MFD, KMD 850 MFD and most MFDs	4.5 x 7.0 x 13.8	$27,719	Traffic Advisory System (TAS) is an active system providing aural and visual advisories. Single or dual directional antennas.
	C147		8.75		
	KTA 970	dual-color, flat-panel LCD combined IVSI/TA display, KMD 550, EFIS, KMD 850 or weather radar	4.5 x 7.0 x 13.8	$36,504	TCAS I system.
	C118		8.75		

COLLISION AVOIDANCE SYSTEMS

Manufacturer	Model / TSO	Display Interface Options	Processor Size / Weight (lb)	Price	Remarks
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**Bendix/King KMH 880**	KMD 550 MFD, KMD 850 MFD and most MFDs	4.5 x 7.0 x 13.8	$43,730	Traffic Advisory System (TAS) and EGPWS in one box. Active traffic system providing aural and visual adviories. Single or dual directional antennas.
	C147, C151, Class B		8.75		
	Bendix/King KMH 980	KMD 550 MFD, KMD 850 MFD and most MFDs	4.5 x 7.0 x 13.8	$56,723	TCAS I and GA-EGPWS.
	C118, C151 Class B		9.68		
	EGPWS MK VI	EFIS (select), MFD and radar indicators	6.2 x 3.0 x 12.1	$41,190	MK VI designed for 10- to 19-passenger turboprop operation, interface and display requirements.
	C151b Class A, C92C		3.5		
	EGPWS MK VIII	EFIS (select), MFD and radar indicators	6.2 x 3.0 x 12.1	$53,898	MK VIII designed for >30-passsenger light transport operations, small turbofan, business jets. No internal GPS
	C151b Class A, C92C		3.5		
	EGPWS MK XXII	EFIS and MFDs	6.2 x 3.0 x 12.1	$59,721	MK XXII is for helicopters with radar altimeters. Low-altitude mode. Internal GPS.
	C151b Class A		3.5		
	EGPWS MK V	EFIS, MFD and radar indicators	7.9 x 2.4 x 12.8	$107,320 (without internal GPS)	MK V is standard equipment on turbofan aircraft with digital avionics.
	C151b Class A, C92c, C117a		7.5		
	EGPWS MK VII	EFIS, MFD and radar indicators	7.9 x 2.4 x 12.8	$112,837	MK VII is for turbofan aircraft equipped with analog avionics.
	C151a Class A, C92c, C117a		8.0		
	CAS 66A System	dual-color, flat-panel LCD combined IVSI/TA display, KTA 870, KMH 880, EFIS or weather radar	½ ATR-S (4 MCU)	$129,247	TCAS I system. Includes processor, control panel, directional antenna and IVSI/TA display. Does not include installation kits. Upgradable to TCAS II.
	C118		17.0		
	CAS 67A System	dual-color, flat-panel LCD combined IVSI/TA/RA display (included in price shown). Also can interface with KMD 550 MFD, KMD 850 MFD, EFIS or weather radar	1/2 ATR-S (4 MCU)	$257,252	TCAS II system includes one TTR-4000 TCAS II LRU, one TRE-920 directional antenna, one TVI-920 VSI (TA/RA) display and one CTL-92T TCAS control panel. Does not include: Mode S transponder(s), installation kits/trays or bottom omni-directional TCAS antena. Software upgradeable to Change 7.1.
	C119 a/b				
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-1000 Fax: (319) 295-2297 **www.rockwellcollins.com**	**TCAS 4000**	Collins EFIS, MFD TCAS compatible VSI (RA) Collins TVI-920 (RA, TA)	4 MCU	$422,064* (typical installation)	TCAS II system. European ACAS compatible Mode S Level III. AC/DC in one part number includes control panel and two TRE antennas. Displays range/alt. separation from traffic. Max range 3 mi. Two surveillance volumes and MSL of traffic. Top/bottom antennas to optimize coverage. Upgrades to 8800 Gold. **BCA* estimate.
	C119 (C119a when issued)		17.0		
Sandel Avionics 2401 Dogwood Way Vista, CA 92081 (877) 726-3357 ((760) 727-4900 Fax: (760) 727-4899 **www.sandel.com**	**ST3400H HeliTAWS**	Integrated rear projection LCD with LED backlighting	3 ATI panel-mount	$18,950	3-ATI helicopter TAWS with integrated display. Can replace existing radar altimeter indicator. Sunlight readable LED backlit display with 180 deg. viewing angle and over 10,000-hr. MTBF. NVIS compatible version $22,200.
	C87, C113, C151b, C194		2.9		
	ST3400 TAWS	Integrated rear projection LCD with LED backlighting	3 ATI panel-mount	$22,750	3-ATI Class A or Class B TAWS with integrated display. Sunlight readable LED backlit display with 180 deg. viewing angle and over 10,000 hr. MTBF. Optional interface for traffic, $980. Class A version, $37,100.
	C113, C151b		2.9		
Universal Avionics Systems Corp. 3260 E. Universal Way Tucson, AZ 85756 (520) 295-2300 (800) 321-5253 Fax: (520) 295-2395 **www.uasc.com**	**TAWS A** **TAWS B**	*Universal Avionics* EFI-890R, MFD-640, UNS FMS (5-in. display) *Honeywell* numerous weather radar, MFD and EFIS displays *Rockwell Collins* numerous weather radar, MFD and EFIS displays *Smiths* BAE ATP EFIS additional display options available	2 MCU LRU	*TAWS A* $40,700 *TAWS B* $26,200	Worldwide terrain database with 480+ MB data. High-resolution analog video views; 3-D perspective view; profile view; map view. Map view of terrain can be output using ARINC 708 or WXPF formats for interface with various existing weather radars. Both version include obstacle database.
	C151b, C92c		9.6		

COCKPIT VOICE RECORDERS (CVR)/FLIGHT DATA RECORDERS (FDR)

Manufacturer	Type / Model / TSO	Recording Medium / Duration	Size / Weight (lb.)	Price / Power Required	Remarks
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**CVR**	solid-state, digital	9.5 x 5.88 x 5.75	$28,123	Non-ARINC size with underwater locator beacon; control panel and mounting tray not required. ARINC 557 and ARINC 757.
	AR 120 CVR 980-6023-002	120 min.	8.8	28 VDC	
	ED 56A, C123a				
	CVR	solid-state, digital	½ ATR short	$40,193	Solid-state CVR with underwater locator beacon. ARINC 557 and ARINC 757.
	SSCVR 980-6022-011	120 min.	11.5	28 VDC 115 AC	
	ED 56A, C123				
	FDR	solid-state, digital	9.5 x 5.88 x 5.75	$41,799	Non-ARINC FDR, ARINC 717, 429. Mounting tray not required.
	AR FDR 980-4710-00X	25 hrs. @ 64, 128, 256 wps	8.8	28 VDC	
	ED 55, C124e				
	FDR	solid-state, digital	½ ATR long or short	$32,126 to $43,729	Solid-state FDR; ARINC Form Factor; underwater locator beacon. ARINC 747, 573, 717. Fire test to ED 56a.
	SSFDR 980-4700-0XX	25 hrs. @ 64, 128, 256 wps	11.5 (short) 13.5 (long)	115 VAC 28 VDC	
	ED 55, C124				
	DVDR/FDR	solid-state, digital	½ ATR short	$48,512	Combination CVR/FDR; ARINC Form Factor. Mounting tray not required. Data download through front access PCMCIA.
	AR Combi 980-6021-06X	120 min. voice; 25 hr. data @ 64, 128, 256 wps	11.5	28 VDC	
	ED 56A, C123a				
Universal Avionics Systems Corp. 3260 E. Universal Way Tucson, AZ 85756 (520) 295-2300 Fax: (520) 295-2395 **www.uasc.com**	**Combi CVR/FDR**	solid-state flash memory	6.0 x 4.9 x 8.0	$19,500	No internal batteries. No periodic maintenance. Four channels of cockpit audio data, UTC from ARINC 429 bus, UTC from a Frequency Shift Keying (FSK) signaling source, Rotor Speed for helicopter application. ARINC 717 Flight Data Recording, analog/digital sensor signals via FDAU, ARINC 758 data link information. PC-based ramp testing/diagonstics.
	CVFDR-145	120-min. voice & ambient audio +25 hr. (min.) Flight data +120 minute data link messaging	7.0	28 VDC	
	C123b, C124b, C177, C123a, C124a, EUROCAE ED-112				
	Combi CVR/FDR w/ embedded Re-dorded Independedt Power Supply (RIPS)	solid-state flash memory	6.0 x 4.9 x 8.0	$27,500	Embedded RIPS. Solid state memory. No internal batteries. No periodic maintenance. Four channels of cockpit audio data, UTC from ARINC 429 bus, UTC from a Frequency Shift Keying (FSK) signaling source, Rotor Speed for helicopter application. ARINC 717 Flight Data Recording, analog/digital sensor signals via FDAU, ARINC 758 data link information. PC-based ramp testing/diagonstics.
	CVFDR-145R	120-min. voice & ambient audio +25 hr. (min.) Flight data +120 minute data link messaging	8.68	28 VDC	
	C123b, C124b, C155, C177, C123a, C124a, EUROCAE ED-112				
	CVR	solid-state flash memory	6.0 x 4.9 x 8.0	$16,500	No internal batteries. No periodic maintenance. Four channels of cockpit audio data, UTC from ARINC 429 bus, UTC from a Frequency Shift Keying (FSK) signaling source, rotor Speed for helicopter applications, ARINC 758 data link information. PC-based ramp testing/diagonstics.
	CVR-120A	120-min. voice & ambient audio	7.9	28 VDC	
	C123b, C177, C123a, EUROCAE ED-112				
	CVR w/embedded Recorded Indepen-dent Power Supply (RIPS)	solid-state flash memory	6.0 x 4.9 x 8.0	$24,500	Embedded RIPS. Solid-state memory. No internal batteries. No periodic maintenance. Four channels of cockpit audio data, UTC from ARINC 429 bus, UTC from a Frequency Shift Keying (FSK) signaling source, rotor speed for helicopter applications. ARINC 758 data link information. PC-based ramp testing/ diagonistics.
	CVR-120R	120 min. voice & ambient audio	8.68	28 VDC	
	C123b, C155, C177, C123a, EUROCAE ED-112				
	FDR	solid-state flash memory	6.0 x 4.9 x 8.0	$16,500	No internal batteries. No periodic maintenance. ARINC 717 Flight Data Recording. Additional data storage beyond 25 hr., analog/ digital sensor signals via FDAU. PC-based ramp testing/diagonstics.
	FDR-25	25 hr. (min) Flight data + 120 min. data link messaging	7.9	28 VDC	
	C124b, C124a, EUROCAE ED-112				

HEAD-UP DISPLAYS

Manufacturer	Model	Inputs & Outputs	Units/Weight (lb.)	Price	Remarks
			Size or Form Factor	Power Required	
Elbit Systems of America-Commercial Aviation Kollsman 220 Daniel Webster Hwy. Merrimack, NH 03054 (603) 889-2500 www.kollsman.com	Advanced Technology HUD (AT-HUD)	ARINC 429, ARINC 615 descretes, Enchaced Vision (EVS) video, Synthetic Vision (SVS) video	33 14.0 x 6.0 x 5.0	$356,000* 28 VDC	Fully digital EFVS video ready LCD HUD that is compact and lightweight. *Contact manufacturer for specific pricing.
Rockwell Collins (Head Up Guidance Systems) 16600 S.W. 72nd Ave. Portland, OR 97224 (503) 443-3050 **www.rockwellcollins.com**	**HGS-4000**	ARINC 429, various discretes, enhanced vision, synthetic vision	48.0 NA	$397,481* —	Category III HUD available on a number of business and regional jet aircraft. Non-CAT III on Bombardier Challenger 604. **BCA estimate.*

AIRCRAFT SITUATION DISPLAYS

Manufacturer	Model	Display	Inputs	Outputs	Units/Weight (lb)	Price	Remarks
	TSO	Display Size			Size or Form Factor	Power Required	
Aspen Avionics 5001 Indian School Rd. NE Albuquerque, NM 87110 (505) 856-5034 Fax: (505) 314-5440 **www.aspenavionics.com**	**EFD 1000 Pilot**	TFT AMLCD (400 x 760)	ARINC 429 (5) RS-232 (5) Pitot/static quick connect	ARINC 429 (1) RS-232 (3)	*display:* 2.6 lb w/mounting bracket *remote sensor:* 0.2 lb	$5,995	Includes integral ADAHRS backup battery and emergency GPS, integral altitude alterter/preselect, GPS flight plan map views: 360° and arc, slaved directional gyro with heading bug.
	C2d, C3d, C4c, C6d, C8d, C10b, C106, C113	6.0-in diag.			*display:* 3.50 x 7.0 x 4.15 *depth:* 6.35 in. *remote sensor:* 2.65 x 4.40 x 1.0 in.	14-28 VDC (provided by PFD)	
	EFD 1000 Pro	TFT AMLCD (400 x 760)	ARINC 429 (5) RS-232 (5) Pitot/static quick connect	ARINC 429 (1) RS-232 (3)	*display:* 2.6 lb w/mounting bracket *remote sensor:* 0.2 lb	$9,995	Same as EFD 1000, plus full EHSI with dual bearing pointers; dual GPS, dual VHF nav support; autopilot and flight director integration; integral GPS steering; base map with curved flight paths; (optional) traffic, weather overlays. EFD PRO HPFD for helicopters, $14,995
	C2d, C3d, C4c, C6d, C8d, C10b, C106, C113	6.0-in. diag.			*display:* 3.50 x 7.0 x 4.15 *depth:* 6.35 in. *remote sensor:* 2.65 x 4.40 x 1.0 in.	14-28 VDC (provided by PFD)	
Avidyne Corp. 55 Old Bedford Rd. Lincoln, MA 01773 (800) 284-3963 Fax: (614) 885-8307 **www.avidyne.com**	**MHD 300**	AMLCD	RS-232 ARINC 429 ARINC 568 (DME)	ARINC 429	2.0/0.9 kg	$7,990* $10,990 with NVG	Interface applications with Avidyne TAS600-Series, Stormscope WX-500, Honeywell Class B TAWS (EGPWS), TCAS I, NVG compatible, DME. **BCA estimate.*
	C147, C118	3 ATI			3.26 x 3.26 x 8.5	10-30 VDC	
Cobham (Chelton Flight Systems) 1111 West Jefferson Ste. 500 Boise, ID 83702 (208) 389-9959 **www.cheltonflight systems.com**	**EFIS**	LCD	ARINC 429, Stormscope WX-500, TCAS, TCAD, ARINC, RMI, ADF, FMS, OAT, VS, GS deviation, landing gear, DH, GPS, RS-232	display, annunciators and aural warnings	—	$70,000* one screen including all sensors	TAWS moving map display, WSI wx, terrain with waterways, TCAS I/II, lightning, Jeppesen NavData, FAA NACO obstructions availlable by subscription. DO-178B 6.0 software TSOed. **BCA estimate.*
	C113, C110a, C151b, C92c	6.4-in. diag.			5.5 x 6.25 x 4.5	11-33 VDC	
Garmin 1200 E. 151st St. Olathe, KS 66062 (800)800-1020 (800)357-8200 Fax: (913) 397-8282 **www.garmin.com**	**HTAWS**	(display interface options: GNS 530 (W) series; GNS 430 (W) series	N/A	N/A	see remaks	$9,995	Options feature for GNS 530/430 (W) Flight Management Systems for helicopters. Visual and aural warnings are provided to warn crew of potential CFIT hazards. Reduced Protection Mode (RP Mode) is available. Additionally provides optional voice callouts (VOCs) when decending 500 feet and lower. Option available for remote mountable annunciaton.
	C194					N/A	

AIRCRAFT SITUATION DISPLAYS

Manufacturer	Model / TSO	Display / Display Size	Inputs	Outputs	Units/Weight (lb) / Size or Form Factor	Price / Power Required	Remarks
Garmin 1200 E. 151st St. Olathe, KS 66062 (800)800-1020 (800)357-8200 Fax: (913) 397-8282 **www.garmin.com**	**GTS 800**	(display interface options): GNS 530 (W), GNS 500 (W), GNS 400 (W), GNS 420 (W), GNS 430 (W), G1000 Series, G900X Series, G600, G500 and select non-Garmin displays	—	—	LRU: 9.0 vertical rack 1.05; horizontal rack, 1.9	$9,995	40-watt TAS , suited to most light helicopters and piston aircraft. Features Garmin's exclusive CLEAR CAS technology with up to 12 miles of active surveillance and ADS-B In capability.
	C147, C166a, DO-197A, DO-200A				(processor size) 6.25 x 2.7 x 12.7	N/A	
	G500	—	RS 232, RS 422, RS 485; ARINC 429, ARINC 708; ethernet, ADF (DC Sine/Cos)	RS 232, RS 422, RS 485; ARINC 429, HDG/CRS output, CDI/VDI flags	1/6.4	$15,995	"Glass cockpit" suite for Class1/Class2 aircraft (under 8,000 lb.). Replaces standard "six-pack" instruments. Features 6.5-in. PFD and MFD, plus AHRS attitude/heading reference and more. Optional Synthetic Vision Technology (SVT). Optional interface adapter.
	C4c, C6d, C8d, C34e, C36e, C40c, C41d, C52b, C63c, C113, C147, C2d	CDU: 10.0 x 6.75 (bezel) x 3.25 (depth)			N/A	10 -40 VDC	
	GTS 820	(display interface options): GNS 530 (W), GNS 500 (W), GNS 400 (W), GNS 420 (W), GNS 430 (W), G1000 Series, G900X Series, G600, G500 and select non-Garmin displays	N/A	N/A	LRU: 9.0 vertical rack 1.05 horizontal rack 1.94	$19,995	TAS for faster and higher-performing aircraft. Combines active/passive surveillance, 250-watt output (for up to 40 miles of active surveillance), and Garmin CLEAR CAS with ADS-B In capability.
	C147, C166a, CO-197A, DO-200A				(processor size) 6.25 x 2.7 x 12.7	—	
	G500H	10.0 x 6.75 (bezel) x 3.25 (depth)	RS 232, RS 422, RS 485; ARINC 429, ethernet	RS 232, RS 422, RS 485; ARINC 429,	1/6.4	$24,995	All-glass avionics system designed specifically for the VFR Part 27 helicopter market. Features includes optional helicopter systhetic vision technology (HSVT), helicopter specific databses with over 7,000 heliports and nearly 30,000 additional low-altitude obstacles, optional XM WX Satellite Weather with NEXRAD, and the ability to display video from a FLIR camera or other video sources. (camera not included.)
	C4c, C6d, C8d, C34e, C36e, C40c, C41d, C52b, C63c, C113, C147, C2d				N/A	10-40 VDC	
	GTS 820	(display interface options): GNS 530 (W), GNS 500 (W), GNS 400 (W), GNS 420 (W), GNS 430 (W), G1000 Series, G900X Series, G600, G500 and select non-Garmin displays	N/A	N/A	LRU: 9.0 vertical rack 1.05 horizontal rack 1.94	$19,995	TAS for faster and higher-performing aircraft. Combines active/passive surveillance, 250-watt output (for up to 40 miles of active surveillance), and Garmin CLEAR CAS with ADS-B In capability.
	C147, C166a, CO-197A, DO-200A				(processor size) 6.25 x 2.7 x 12.7	—	
	G500H	10.0 x 6.75 (bezel) x 3.25 (depth)	RS 232, RS 422, RS 485; ARINC 429, ethernet	RS 232, RS 422, RS 485; ARINC 429,	1/6.4	$24,995	All-glass avionics system designed specifically for the VFR Part 27 helicopter market. Features includes optional helicopter systhetic vision technology (HSVT), helicopter specific databses with over 7,000 heliports and nearly 30,000 additional low-altitude obstacles, optional XM WX Satellite Weather with NEXRAD, and the ability to display video from a FLIR camera or other video sources. (camera not included.)
	C4c, C6d, C8d, C34e, C36e, C40c, C41d, C52b, C63c, C113, C147, C2d				N/A	10-40 VDC	

AIRCRAFT SITUATION DISPLAYS

Manufacturer	Model / TSO	Display / Display Size	Inputs	Outputs	Units/Weight (lb) / Size or Form Factor	Price / Power Required	Remarks
Garmin 1200 E. 151st St. Olathe, KS 66062 (800)800-1020 (800)357-8200 Fax: (913) 397-8282 **www.garmin.com**	**GTS 850**	(display interface options): GNS 530 (W), GNS 500 (W), GNS 400 (W), GNS 420 (W), GNS 430 (W), G1000 Series, G900X Series, G600, G500 and select non-Garmin displays	N/A	N/A	LRU: 9.0 vertical rack 1.05 horizontal rack 1.94	$24,995	Satisfies all TCAS I collision avoidance criteria for high-capability turboprops and jets. Garmin CLEAR CAS enables both active and passiv surveillance with 1090 MHz ADS-B “in” capability. 250 watts output.
	C118, C116a, D0-197A, D0-267A				(processor size) 6.25 x 2.7 x 12.7	10-40 VDC	
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**KDR 610 XM Weather Receiver**	see remarks	weather displays via XM satellite	interfaced to Bendix/King KMD 250, KMD 550 and KMD 850 MFDs	1/1.5	$7,408	Part of an MFD system; data link weather receiver provides high- speed textual and graphical weather to the cockpit. Available weather products include composite NEXRAD radar, graphical METARs, AIRMETS and SIGMETS. The active flight plan can be overlaid on all graphical weather images. System enables user to pan, zoom and interrogate areas of interest via joystick.
	C157	see remarks			see remarks	10-32 VDC	
	Honeywell MFRD	LCD	RS-232 ARINC 429, radar, datalink, EGPWS, traffic, NTSC video	display	1/7.0	$52,327	Multi-function display of weather radar, traffic, terrain, navigation maps, checklists.
	C63c, C110a, C113, C196	6 in. diag.			4.8 x 6.2 x 8.4	28 VCD or 115 VAC 400 Hz	
	Trilogy ESI-1000	AMLCD; optional NVG compatibility	N/A	N/A	1/2.22	$14,995	Electronic standby instrument designed to level “A” software and hardware compliances, the Trilogy ESI replaces traditional standby instruments and combines attitude, altitude and airspeed infomation into a compact 3.8-in. diagonal display while maintaining a 3-ATI chassis design. Heading is available when coupled with the optional magnetometer. For fixed-wing and helicopter applications.
	C2d, C3e, C4c, C6e, C10b, C46a, C113, C179	4.0 x 3.0			3-ATI chassis 4.0 x. 3.35 x 7.66	14 - 28 VDC	
	Trilogy ESI-2000	AMLCD; optional NVG compatibility	N/A	N/A	1/2.56	$15,700	Electronic standby instrument incorporates an internal batery to meet the requirements for independent, dedicated back-up power for aircraft without dual electrical system. The lithium ion battery is integrated into the ESI-2000 hardware with a triple redundant safety design and provides a minimum of 1 hr. and up to 4 hr. of standby power. Heading is available when coupled with the optional magnetometer. For fixed-wing and helicopter applications.
	C2d, C3e, C4c, C6e, C10b, C46a, C113, C179	4.0 x 3.0.			3-ATI chassis 4.0 x. 3.00 x 6.7	14 - 28 VDC	
L-3 Avionics Systems 5353 52nd St. S.W. Grand Rapids, MI 49512 (616) 949-6600 Fax: (616) 285-4224 **www.L-3avionics.com**	**GH-3000**	AMLCD; optional NVG compatibility	2 - CSDB 4 - ARINC 429 1 - RS-422	2 - CSDB 4 - ARINC 429 1 - RS-422	1/ 3.6	$15,990	Electronic standby instrument features solid-state sensor technology, active matrix LCD and custom programming to visully match most aircraft primary EFIS. Remote air data computer provides altitude, airspeed and vertical speed information. Navigation interfaces include options for ILS,VOR, DME, FMS and TACAN. Optional heading display via remote-mount magnetometer. For fixed-wing and helicopter applications.
	C2d, C4, C6d, C9d, C10b, C34e, C36e, C40c, C46a, C66a, C119, C115b	3 ATI			3-ATI chassis 3.3 x 3.3 x 9.54	28 VDC	

AIRCRAFT SITUATION DISPLAYS

Manufacturer	Model / TSO	Display / Display Size	Inputs	Outputs	Units/Weight (lb) / Size or Form Factor	Price / Power Required	Remarks
L-3 Avionics Systems 5353 52nd St. S.W. Grand Rapids, MI 49512 (616) 949-6600 Fax: (616) 285-4224 **www.L-3avionics.com**	**GH-3100**	AMLCD; optional NVG compatibility	2 - CSDB 6 - ARINC 429 1 - RS-422	2 - CSDB 4 - ARINC 429 1 - RS-422	1/ 4.0	$56,990	Electronic standby instrument with same features as GH-3000 but includes an integrated air data card to provide altitude, airspeed and vertical speed information. The compact solid-state ADC module adds less than 1 in. to the total length of the system, saving valuable space and weight. Optional heading display via ARINC 429 or remote-mount magnetometer.
	C2d, C4c, C6d, C10b, C34e, C36e, C40c, C46a, C66a, C106, C113, C115b, ETSO	3 ATI			3-ATI chassis 3.3 x 3.3 x 3-ATI 11.0	28 VDC	
Rogerson-Kratos 403 S. Raymond Pasadena, CA 91109 (626) 449-3090 **www.rogersonkratos.com**	**5 ATI EFIS**	AMLCD flat panel	analog synchro (XYZ, Sin/Cos) variable AC/DC discretes & digital ARINC 429, 419, 453, 735, RS-232	analog synchro (XYZ, Sin/Cos) variable AC/DC discretes & digital ARINC 429, 419, 453, 735, RS-232	1/7.75	$42,000*	One, two or four programmable, self-contained flat-panel AMLCD EADI and EHSIs. Radio altimeter functions such as DH, expanded scale for landing helicopter operations, TCAS I and II, and EGPWS display capability, in addition to standard ADI, HSI, bearing pointers, CDI, autopilot annunciation, flight director cross bars or 'V' bars. Upgrade packages available. **BCA estimate.*
	C3d, C4c, C5e, C6d, C8d, C9c, C34e, C35d, C36e, C40c, C41d, C52b, C63c, C66c, C67, C87, C92c, C113, C117a, C118, C119b, C129a, C147, C161a	5 ATI or 6.4-in. diagonal			5 ATI or 6.4 dia.	28 VDC 44 W max	
Sandel Avionics 2401 Dogwood Way Vista, CA 92081 (877) 726-3357 (760) 727-4900 Fax: (760) 727-4899 **www.sandel.com**	**SA4550 Primary Attitude Display**	rear projection LCD w/LED backlighting	analog: attitude glideslope, locaiizer, flight director command inputs, radar altimeter mode annunciators	N/A	1/3.4	$20,950*	Designed to upgrade legacy ADIs. Incorporates flight director command bars, glideslope/ localizer deviation scale, fast/ slow indicator and mode annunciations. Selectable single-cue/split-cue display option. Sunlight readable LED backlit display with 180-degree viewing angle and over 10,000-hour MTBF. *High-vibration version, $23,800. NVIS compatible version, $27,050
	C113, C3d, C4c, C34e, C36e, C52b	4 ATI			4 ATI	20-33 VDC 40 W	
Universal Avionics Systems Corp. 3260 E. Universal Way Tucson, AZ 85756 (520) 295-2300 Fax: (520) 295-2395 **www.uasc.com**	**EFI-550**	AMLCD,; optional NVG compatibility	ARINC 6 - 429/419 1 - 561/568 2 - 453/708A 2 - RS 422 4 - analog 30 - discretes*	ARINC 429/49 (2) RS 422 (2) 6 - analog 8 - discretes	1/7.1	$14,995	*Depending on configuration.
	C3d, C4e, C5e, C6d, C52b, C105, C113	3.35 x 4.36 5.5-in. dia.			(EFIS-85 std.) 4.8 x 5.18 x 7.90 (from front mount surface)	28 VDC	
	EFI-640	AMLCD	ARINC 6 - 429/419 1 - 561/568 2 - 453/708A 2 - RS 422 4 - analog 30 - discretes*	ARINC 429/49 (2) RS 422 (2) 6 - analog 8 - discretes	1/7.8	$36,000*	Horizontal viewing angles of +/-60°.; electronically adjusted vertical viewing angle; sunlight readability with greater than 10,000/1 dimming range. **Depending on configuration.*
	C3d, C4c, C5e, C6d, C52b, C105, C113	3.86 x 5.14 6.4-in. dia.			5 x 6 ATI 5.18 x 6.18 x 7.9 (from front mount surface)	28 VDC	
Universal Avionics Systems Corp. 3260 E. Universal Way Tucson, AZ 85756 (520) 295-2300 Fax: (520) 295-2395 **www.uasc.com**	**EFI-890R**	active matrix color LCD	Analog: 6 - ARINC 429 5 - CSDB 2 - ARINC 708 3 - Manchester bus ports 2 - VGA or 1 - RDR-1E/F & 1 - VGS, 2 - RS-170 or 2 - NTSC comp. or 18:1 1 - RS-232 (maint.) Digital: 28 GND/OPN discretes 14 - 28 VDC/OPN 4 - ARINC 407 with 2 ref. inputs 15 - analog DC	Analog: 2 - ARINC 429 2 - CSDB 1 - Manchester bus port Digital: 5 - GND/OPN discretes 3 - 28 VDC/OPN discretes 6 - analog resolvers 2 - DC differential 2 - DC single ended	1/ 12.0	$60,000*	Horizontal viewing angle +60°/-60°, vertical viewing angle +45°/-10°; resolution: 780 x 780 pixels; 124.5 color groups per inch (CGPI); sunlight readability with greater than 10,000/1 dimming range. **Depending on configuration.*
	C2d, C3d, C4c, C5e, C6d, C8d, C10b, C34e, C35d, C36c, C40c, C41d, C52b, C63c, C66c, C87, C92c, C95, C105, C113, C115b, C118, C119a, C129a, C151a	6.3 x 6.3 (8.0 in dia.)			bezel: 7.84 h x 7.42 w depth: 9.79 (back of bezel to rear of connector)	28 VDC	

ELECTRONIC FLIGHT BAGS

Manufacturer	Model / Class	Display / Display Size	Inputs	Outputs	Units/Weight (lb) / Size	Price / Power Required	Remarks
Advanced Data Research Florida 1765 Star Batt Dr. Rochester Hills, MI 48309 (248) 299-5300, Ext. 235 Fax: (248) 299-5319 **www.adrsoft.com**	**FG 7100 EFB Kit**	WXGA transmissive LCD with vertical portrait screen (1280 x 768)	2 USB 2.0, external monitor, PCMCIA card slot, secure Digital (SD) card, modem (RJ-11), ethernet (RJ-45), headphone, mic, docking port	VGA, sound 2 serial (with PCMCIA adapter)	1/2.21	$3,995	Fujitsu Lifebook P1630 coputer with 1.2 GHz Intel Core 2 Duo VLV processor, 1 GB memory (2 GB) optional), 80 GB hard drive (120 GB and 64 GB solid-state drive optional); integrated 802.11 a/b/gDraft N and Bluetooth wireless LAN, PCMCIA and SD drives; Windows XP Tablet Edition, DVD + RW drive and cable, AC adapter, FCS software. Optional TSO'd power supply, plus many other options.
	Class II	8.9-in. diagonal			9.3 x 6.6 x 1.5	16 VCDC	
Esterline CMC Electronics 600 Dr. Frederick Phillips Blvd. Montreal, Quebec, Canada 4HM259 (514) 748-3184 Fax: (514) 748-3100 **www.cmcelectronics.ca**	**Pilot-View CMA-1100 (8.4 in.) or CMA-1410 (10.4 in.)**	touch-screen XGA AMLCD	ARINC 429 (4) Ethernet USB 2.0 (2) RS 232/422, RS-170/NTSC video discrete I/O (4x1), EDU USB 2.0 (2); PCMCIA wireless 802.11 a/b/g	*ARINC 429 (2) Discretes (2) video GPS position*	*EDU:* 3.5 *EDU:* 4.0 *EEMU:* 2.0	8.4-in. units: $25,880 10.4-in. units: $28,880	Touch-sensitive screen and line select keys with intuitive pilot interface. Applications include: electronic charts (Jeppesen, Lido, EAG, etc.), checklists, performance calculation, e-documents, e-techlog, moving maps and weather. EFB system comprises Electronic Display/Processor Unit (EDU), Enhanced Expansion Module Unit (EEMU).
	Class 2	8.4-in. or 10.4-in. diagonal			*EDU:* 8.5 x 6.1 x 1.5 *EDU:* 8.0 x 9.6 x 1.6 *EEMU:* 1.9 x 6.9 x 5.1	N/A 22-33 VDC or 110/400 Hz	
IMS Flight Deck 16 Technology Dr. Ste. 142 Irvine, CA 92618-2324 (949) 679-9900 **www.flightdeck.aero**	**Sky Tab 2350**	LCD	1 USB 2.0 port, 1 PCMCIA port, headphone, microphone, 802.11 wireless, Bluetooth	802.11 wireless, Bluetooth	1/1.9	N/A	Microsoft Windows XP Tablet PC OS, 30 GB standard hard drive, optional 8 GB solid state flash drive. No stylus requried. AC/DC adapter.
	Class 1	8.4-in. TFT LCD, nced direct sunlight readable, 800 x 600 dpi resolution			7.9 x 9.6 x 0.8		
Innovative Solutions and Support 720 Pennsylvania Dr Exton, PA 19341 (610) 646-9800 **www.innovative-ss.com**	Available on IS&S **AVIO NG, ADVIZ, Vantage, PC-12 FPDS, cockpit and IP and others.**	AMLCD 10.4 inch, 15.4 inch	integrated in glass cockpit	integrated in glass cockpit	Remote chart server: 8.0 Display 6.0 mounted in panel	N/A see remarks	Integrated Class 3 chart server system for all models of IS&S Cockpit Display Systems. Class 3 chart information is certified for paperless cockpit with dual servers, own-ship position on all geo-synchornized charts and taxi ways. System provides both full page and patented ZOOM scrolling for detail. Charts include all RNAV, LPV approaches as well. Fast chart search is provided for all charts on the route including approach, departure, SID/STARS. Moving map cursor inputs allow for graphical selection of airports or navaids.
NavAero 9-15 W. Hubbard St. 5th Floor Chicago, IL 60610 (866) 628-2376 Fax: (312) 423-9966 **www.navaero.com**	t-BagC22 EFB	color TFT LCD resistive touch screen	CPU: 1 USB slot Connectors: 61 pin sealed cradle connector, tPad interface, 3 USB, 1 RS-232 1 LAN	CPU: 1 USB slot Connectors: 61 pin sealed cradle connector, tPad interface, 3 USB, 1 RS-232 1 LAN	1/NA	$3,495* with 8.4-in. display $3,995* with 10.4-in. display	*Installation kit extra. Class 2 EFB can be used to store, retrieve, display and use a wide variety of required documents and procedures such as operations specifications, performance data, operations manuals, MELs, control documents and video surveillance. CPU: 1 GHz processor, 40GB hard drive, 512MB memory, Windows XP Professional OS. Removable CPU module computer system contains CPU, power supply and emergency battery backup nickel cadmium power pack. **BCA estimate.*
	Class 2	8.4 in. or 10.4 in.			93.8 x 113.8 x 23.8 excluding connectors and mounting hardware	13.8-30 VDC 60 W maximum	
Universal Avionics Systems Corp. 3260 E. Universal Way Tucson, AZ 85756 (520) 295-2300 Fax: (520) 295-2395 **www.uasc.com**	ASU (Application Server Unit)	UCDT III touch screen terminal display	4 ARINC 429, 8 discrete, 2 NTSC video 1 S video 10/100 base T network capability	1 ARINC 429 4 discrete, 10/100 base T network capability	Remote ASU 1/7.5 2 MCU	$30,000	Provides supplementary display for viewing electronic charts, checklists and external video sources. As an electronic flight bag (EFB), the ASU supports a terminal area chart database via Jeppesen, Inc. Charts, NOTAMs and airport information downloaded from CD-ROM and stored in flash memory within ASU. Flight plan departure and arrival airport information from FMS prompts displays of departure, arrival and approach charts and airport diagrams. Manual searches accomplished via pull-down menu and touch-screen keyboard. Two user-defined zoom levels. System overlays aircraft position onto approach charts and airport diagrams.
	Class 3	5.1 x 6.75 in. 8.4-in. diag			UCD terminal III 1/2.8 6.52 x 8.43 x 1.13	powered by UCD	

ENHANCED/SYNTHETIC VISION SYSTEMS

Manufacturer	Model / TSO	Display / Display Size	Inputs	Outputs	Units/Weight (lb.) / Size	Remarks
Esterline CMC Electronics 600 Dr. Frederick Phillips Blvd. Montral, Quebec, Canada H4M259 (514) 748-3184 Fax: (514) 748-3100 **www.cmcelectronics.ca**	**CMA-2600 SureSight I-series EVS-IR Sensor**	HUD/HDD	single, dual-band sensor operating in the short to medium wavelengths, 1-5 microns	2-ANSI/SMPTE 170M ARINC 429 RS 422 descretes	1/LRU 21.0	When used with a HUD as part of a certified EVS, infrared sensor provides situational awareness to pilot for night and low-visibility situations.
	—	dependent on HUD/HDD			NA	
	CMA-2600i SureSight I-Series EVS-IR sensor	HUD/HDD	single, dual-band sensor operating in the short to medium wavelengths, 1-5 microns	2-ANSI/SMPTE 170M ARINC 429 RS 422 descretes	1/LRU 21.0	Infrared sensor provides situation awareness to pilots for night and low-visibility situation.
	—	dependent on HUD/HDD			—	
	CMA-2700 SureSight I-Series EVS-IR sensor	HUD/HDD	single, dual-band sensor operating in the short to medium wavelengths, 1-5 microns	2-ANSI/SMPTE 170M ARINC 429 RS 422 descretes 2 ARINC 818	1/LRU 21.0 —	Infrared sensor provides situation awareness to pilots for night and low-visibility situation.
Elbit Systems of America Commercial Aviation Systems - Kollsman 220 Daniel Webster Hwy. Merrimack, NH 03054 (603) 889-2500 **www.kollsman.com**	**EVS II**	HUD/HDD	1-5 micron infrared sensor	RS-170/SMPTE 170M; SMPTE 259; RS 232/RS 422; ARINC 429 descrets	3/22.0	EFVS certified for FAR 91.175 (l) and (m) operational credit. EFVS certified for Part 91, 135 and 121 operations on fixed- and rotary-wing applications. *Contact manufacturer for specific application pricing.
		N/A			1/2 ATR	
	GAViS	any RS-170/ SMPTE, 170M analog video capable display	8-14 micron infrared sdensor	RS-170/SMPTE 170M, analog video	1/3.5	EVS certified for situational awareness in all weather conditions. Certified for fixed- and rotary-wing aircraft. *Contact manufacturer for specific application pricing.
	see remarks	N/A			3.0 x 6.0 x 11.0	
L-3 Avionics Systems 5353 52nd St. S.W. Grand Rapids, MI 49512 (616) 949-6600 Fax: (616) 285-4224 **www.L-3avionics.com**	**IRIS A100**	any RS-10 compatible displays	7 -14 micron, uncooled ferroelectric sensor	RS-170, NTSC compatible video or PAL	1/1.7	Uses uncooled BST technology, IRIS provides enhanced visibility of almost any object, day or night, by measuring variations in heat signatures. A real-time, black and white image of people, animals, aircraft and terrain is displayed on any compatible RS-170 cockpit display. *King Air, Bell 206 and Twin Commander STC kits additional. Contact factory for pricing and details.
	see remarks	N/A			5.4 x 5.4 x 3.4	
MAX-VIZ, Inc. 16165 S.W. 72nd Ave. Portland, OR 97224 (503) 968-3036 Fax: (503) 968-7615 **www.Max-Viz.com**	**EVS-1500**	HDD/HUD compatible with many MFDs	long-wave infrared solid-state uncooled sensor	RS-170	camera: -2.8 diameter x 6.8 length power module: 3.75 x 5.0 x 2.25 camera: 2 lb. power module: 2.5 lb.	Pilot selectable dual field of view. Optical zoom. Designed for high-performance fixed- and rotary-wing aircraft.
	—	—			3.77 x 8.69 x 2.51/1.2lb.	
	EVS-600	HDD/MFC	long-wave infrared solid-state uncooled sensor	RS-170	3.77 x 8.69 x 2.51/1.2lb.	Long-wave infrared solid-state uncooled sensor. Limited to FL 250 or below.
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FLIGHT MANAGEMENT SYSTEMS

Manufacturer	Model / TSOs / RNP Certification	CDU Type / Display Type	# Available ARINC 429 (In/Out) / TSO'd Nav Sensors	Vertical Nav Modes / # Available ARINC 429 Procedure Legs	Performance Management / Remote Radio Tuning / ARINC Radar (In)	Air Data In (# types)	Specific Interfaces / ARINC 429 (Out)	Weight (.lbs) / CDU Dimensions / Power	Price / Remarks
Avidyne 55 Old Bedford Rd. Lincoln, MA 01773 (781) 402-7400 (800) AVIDYNE Fax: (781) 402-7599 **www.avidyne.com**	**FMS900W** C146 WAAS RNP 0.3, -5, -10 BRNAV	see remarks LCD (optional)	— WAAS, VOR, IRS	multi-waypoint, advisory 23	No Yes No	4 optional; 2 std.	none none		$70,000. Integrated into Avidyne Entegra Release 9 Flight Deck. Price includes FMS900W, dual IDF5000 displays, dual VHF nav/com, dual WAAS GPS sensors and ACD215 control panel.
Esterline CMC Electronics 600 Dr. Frrederik Philips Blvd. Montreal, Quebec Canada H4M 259 (514) 748-3184 Fax: (514) 748-3100 **www.cmcelectronics.ca**	**CMA-9000** C129, C146 RNP 0.3, -10, BRNAV, PRNAV	full alpha keyboard AMLCD, color	24/8 GPS, WAAS, VOR, DME, INS, IRS, TACAN	multi-waypoint, advisory Coupled	No Yes No	ARINC 575	429 DME std.; 429 VOR std.		Price varies by installation. Coupled, performance optimized and advisory VNAV for climb, cruise, descent, approach. Performance table based. FANS-1 capable LPV Approach capable. Optional NVG display.
FreeFlight Systems 3700 Interstate 35 S. Waco, TX 76706 (254) 662-0000 Fax: (254-662-9450 www.freeflightsystems.com	**2101 Approach Plus** — BRNAV	Dzus LED	4/0 GPS, WAAS	Advisory 4	No No None	ARINC 565, ARINC 575; Coarse/Fine A407 Synchro, ARINC 545, TAS, ARINC 429 ADC, RS-232 ADC	ARINC 429 GPS RS-232		$7245. Price includes receiver, data card, installation kit (with antena), installation manual and pilot guide, Unit also available with NVG capability.
	2101 I/O Approach Plus — BRNAV	Dzus LED	4/0 GPS, WAAS	Advisory 4	No No None	ARINC 565, ARINC 575; Coarse/Fine A407 Synchro, ARINC 545, TAS, ARINC 429 ADC, RS-232 ADC	ARINC 429 GPS RS-232		$11,500. Price includes receiver, datacard, installation kit (with antena), installation manual and pilot guide. Sole means oceanic approval; interfaces with EGPWS.
Honeywell Aerospace 1944 East Sky Harbor Circle Phoenix, AZ 85034 (800) 601-3099 Fax: (602) 365-3343 **www.honeywell.com**	**GNS-XLs** C129 GPS, C146 WAAS-A1, -B1, -C1k (std.); VOR, DMe, INS, IRS (opt.) RNO (see remarks) RNP (see remarks)	full alpha keyboard LCD	13/0 GPS, WAAS, VOR, DME, INS, IRS	Advisory 10	No Std. No	ARINC 565, ARINC 575, Course/Fine A407 Synchro, ARINC 545 TAS, ARINC 429 ADC, RS-232 ADC	ARINC 429 GPS, S422A CSDB DME, ARINC 429 DMe, Bendix 429 VOR, ARINC 429 VOR, ARINC 429 INS		$60,333. Enhanced version available. Optional RPU will display weather, EGPWS graphics. RNP: 0.3, 5, 10, BRNAV, PRNAV.

FLIGHT MANAGEMENT SYSTEMS

Manufacturer	Model / TSOs / RNP Certification	CDU Type / Display Type	# Available ARINC 429 (In/Out) / TSO'd Nav Sensors	Vertical Nav Modes / # Available ARINC 429 Procedure Legs	Performance Management / Remote Radio Tuning / ARINC Radar (In)	Air Data In (# types)	Specific Interfaces / ARINC 429 (Out)	Weight (.lbs) / CDU Dimensions / Power	Price / Remarks
Rockwell Collins 400 Collins Rd. N.E. Cedar Rapids, IA 52498 (319) 295-4085 Fax: (319) 295-2297 **www.rockwellcollins.com**	**FMS 3000/5000**	full alpha keyboard	4/3	multi-waypoint	Yes	see remarks	see remarks		LPV approach capability and RF legs are available on some aircraft types. *FMS I/O provided by four redundant concentrators. Remote computer dimensions 1.7 x 8.84 x 6.06 in.; FMS 5000 requires radio tuning unit; FMS 3000 radio tuning is internal.
	C129 GPS, C146 WAAS-B1, -C1	color LCD			Yes				
	RNP 0.3, -10, BRNAV		GPS, WAAS, DME, INC, Loran C	23	see remarks				
	FMS 4200/5000	full alpha keyboard	4/3	multi-waypoint	Yes	see remarks	see remarks		LPV approach capability and RF legs are available on some aircraft types. *FMS I/O provided by four redundant concentrators. See FMS3000 remarks for remote computer; FMS4200 has advisory VNAV but not FMS-to-ILS auto transfer; Coupled VNAV available on FMS6000.
	C129 GPS, C146 WAAS-B1, -C1	color LCD			Yes				
	RNP 0.3, -10 BRNAV		GPS, WAAS, DME, INC, Loran C	23	see remarks				
	FMS 6100	full alpha keyboard	4/3	multi-waypoint	Yes	see remarks	see remarks		FMS I/O provided by four redundant concentrators. See FMS 3000 remarks for remote computer. WAAS/ SBAS capable.
	C129 GPS, C146 WAAS-B1, -C1	color LCD			Yes				
	RNP 0.3, -10 BRNAV		VOR< GPS, WAAS, DME, INS, Loran C	23	see remarks				

FLIGHT MANAGEMENT SYSTEMS

Manufacturer	Model / TSOs / RNP Certification	CDU Type / Display Type	# Available ARINC 429 (In/Out) / TSO'd Nav Sensors	Vertical Nav Modes / # Available ARINC 429 Procedure Legs	Performance Management / Remote Radio Tuning / ARINC Radar (In)	Air Data In (# types)	Specific Interfaces / ARINC 429 (Out)	Weight (.lbs) / CDU Dimensions / Power	Price / Remarks
Universal Avionics Systems Corp. 3260 E. Universal Way Tucson, AZ 85756 (520) 295-2300 (800) 321-5253 Fax: (520) 295-2395 **www.uasc.com**	**UNS-1Lw** C129 GPS, C146B Gamma RNP 0.3, -5, -10	color LCD	8/5 GPS, WAAS, Optional: VOR, DME, INS, IRS, Loran C, TACAN	23 multi-waypoint	opt. opt. std.	ARINC 575, ARINC 429 ADC std.; ARINC 565, Course/ Fine A407 Snchro, ARINC 545 TAS opt.	ARINC 429 GPS, S422A CSDB DME, Arinc 429 DME, Bendix 429 VOR, ARINC 429 VOR, ARINC 429 INS		$54,500. Air data converter unit available; 3-D coupled approach mode; PC program for remote/oceanic ops.; UniLink text compatible; WAAS/ SBAS capable.
	UNS-1LEw C129 GPS, C146B Gamma	full alpha keyboard color LCD	8/5						$69,000. 3-D coupled approach mode; PC program for remote/oceanic ops.; UniLink text compatible; WAAS/ SBAS capable.
	UNS-1Espw C129 GPS, C146B RNP 0.3, 5, 10								$68,000. 3-D coupled approach mode; PC program for remote/oceanic ops.; UniLink text compatible; WAAS/ SBAS capable..
	UNS-1Fw C129 GPS, C146B Gamma RNP 0.3, 5, 10								$81,500. 3-D coupled approach mode; PC program for remote/oceanic ops.; UniLink text compatible; WAAS/ SBAS capable.

INTEGRATED AVIONICS SYSTEMS

Manufacturer	Model	Inputs	Outputs	CDU Type / Dimensions	Operational Capabilities	Weight (lb.) / Dimensions / Power Required	Price/Remarks
Avidyne Corp. 55 Old edford Rd. #101 Lincoln, MA 01773 (781) 402-7400 www.avidyne.com	**Entegra Release 8**	see remarks	see remarks	see remarks	FMS, PFD/ MFD, AP/ IFCS, EFIS, TAWS, RMU, SVS, CAS/ TAWS	18.75 two 10.4 in. diagonal, color active matris displays 28 VDC	Integrates primary flight information, navigation, terrain, weather, traffic on two or three large-formate displays. Selectable IAS and V-speed ranges to suit aircraft installations. Dual-PFD version features CCS Cross Compare System that monitors cross-side PDF and ADAHARS signals 30 times per second. Works with STEC 55 X autopilot and 3rd party GPS/NAV/ Coms for position information.
	Entegra Release9	see remarks	see remarks	see remarks	FMS, PFD/ MFD, AP/ IFCS, EFIS, TAWS, RMU, SVS, CAS/ TAWS	18.75 two 10.4 in. diagonal, color active matris displays 28 VDC	Cirrus Gold starting at $59,000; Piper Matrix starting at $72,800. Integrates primart flight information, navigation, weather and traffic on two or three large-format displays. Displays sizes include 8 in., 10 in., 12 in. and 15 in. Modular design includes dual VHF NAV/COM, dual WAASD GPS,dual FMS900w, dual ADAHRS, remote transponder tuning. ACD 215 alpha-numeric FMS keypad with display. Optional SVS and EVS.
Cobham Commercial Systems Integrated Systems One S-TEC Way Municipal Airport Mineral Well, TX 76067 (817) 215-7600 www.s-tec.com	**Chelton Flight Systems EFIS**	WX500, ADF, TCASi/II, TCAD, ADS-B, TIS-B, radar altimeter, ARNC 429, RS-232, RS-422, 10 discretes	ARINC 429, RS-232, RS-422, 10 discretes, autopilot	color LCD 6.25 x 5.5 in. NVG compatible	FMS, PDF/ MFD, AP/ IFCS, EFIS, TAWS, SVVS, CAS/TAWS	two screen: 2.0 four screen: 50.0 — 10-32 VDC	Two screens: $95,000; Four screens: $150,000.
Garmin International 1200 E. 151st St. Olathe, KS 66062-3426 (913) 397-8200 Fax: (913) 397-8282 www.garmin.com	**G1000**	TCAS i/II, RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/ HIS, RMI, air data	10- or 12-in. flat-panel LCDs interchange-able for use as either a PFD or MFD. Optional 15 in. screen available	see remarks	— — —	Price varies by installation. An all-glass avionics suite designed for OEM or custom retrofit installation on a wide range of business aircraft. Integrates primary flight information, navigation, communication, weather, terrain and traffic data on two or three large format displays. Tailored to specific OEM requirements. Features include 3-axis, all-digital flight control system; Synthetic Vision Pathway navigation; dual AHRS; dual radio modules with WAAS certified IFR Oceanic-approved GPS, VHF Nav with ILS and VHF Com; dual RVSM-compliant DADC; EICAS; Mode S transponder with TIS; Class B TAWS; Digital weather radar; System also available for King Air 200 and C90.
	G2000	TCAS i/II, RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/ HIS, RMI, air data	12- or 14-in. backlit LED see remarks	see remarks	— — —	Price varies by installation. Integrates primary flight information, navigation, communication, weather, terrain and traffic data on two large format displays. Tailored to specific OEM requirements. Features include three-axis, all-digital automatic flight control system; Synthetic Vision Pathway navigation; dual solid-state AHRS; dual integrated radio modules with WAAS certified IFR Oceanic-approved GPS, VHF Nav with ILS and VHF Com with 16-W transceivers and 8.33-kHz spacing; dual RVSM-compliant DADC; EICAS; Mode S with TIS; Class B TAWS; digital weather radar; Garmin FliteCharts; and Garmin SafeTaxi.

INTEGRATED AVIONICS SYSTEMS

Manufacturer	Model	Inputs	Outputs	CDU Type / Dimensions	Operational Capabilities	Weight (lb.) / Dimensions / Power Required	Price/Remarks
Garmin International 1200 E. 151st St. Olathe, KS 66062-3426 (913) 397-8200 Fax: (913) 397-8282 www.garmin.com	**G3000**	TCAS i/II, RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	14.1-in. diagonal WXGA see remarks	see remarks	— — —	Price varies by installation. Integrates primary flight information, navigation, communication, weather, terrain and traffic data on 3 large format displays. Tailored to specific OEM requirements. Features include three-axis, all-digital automatic flight control system; Synthetic Vision Pathway navigation; dual solid state AHRS; dual integrated radio modules with WAAS certified IFR oceanic-approved GPS, VHF navigation with ILS and VHF communication with 16-watt transceivers and 8.33-kHz channel spacing; dual RVSM-compliant digital air-data computer; EICAS; Mode S transponder with TIS; Class B TAWS; XM Wx and/or digital weather radar; Garmin FliteCharts; and Garmin SafeTaxi.
	G5000	TCAS i/II, RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	four backlit LED XGA 1280 X 800 pixels touch-screen displays see remaks	see remarks	— — —	Price varies by installation. intended for use aboard a broad range of professionally flown air transport category aircraft, ranging from light jets to large-cabin, transoceanic aircraft. Integrates primary flight information, navigation, communication, weather, terrain and traffic data on 4 large format displays. Features include three-axis, all-digital automatic flight control system; Synthetic Vision Pathway navigation; dual solid state AHRS; dual integrated radio modules with WAAS certified IFR oceanic-approved GPS, VHF navigation with ILS and VHF communication with 16-watt transceivers and 8.33-kHz channel spacing; dual RVSM-compliant digital air-data computer; EICAS; Mode S transponder with TIS; Class B TAWS; XM Wx and/or digital weather radar; Garmin FliteCharts; and Garmin SafeTaxi.
	G500	TCAS i/II, RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	dual 6.5-in. VGA LCDs —	see remarks	— — —	$15,995. Includes CDU, digital AHRS, ADC, magnetometer, temperature probe. Also certifled to C2d, C10b and C34c. Replaces standard six-pack instruments. Features 6.5-in. PFD and MFD plus AHRS. SVT is standard with G600 and optional for G500. Optional TAWS-B for G600 only. GWX68 radar sold separately. Includes CDU (dual 6.5-in. VGA LCD), digital AHRS, ADC, magnetometer, temperature probe. Optional enhanced autopilot interface capabilities using the optional GAD 43.
	G600	TCAS i/II, RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	dual 6.5-in. VGA LCDs —	see remarks	— — —	$29,995. Includes CDU, digital AHRS, ADC, magnetometer, temperature probe. Also certified to C2d, C10b and C34c. Replaces standard six-pack instruments. Features 6.5-in. PFD and MFD plus AHRS. SVT is standard with G600 and optional for G500. Optional TAWS-B for G600 only. GWX68 radar sold separately. Includes CDU (dual 6.5-in. VGA LCD), digital AHRS, ADC, magnetometer, temperature probe. Optional enhanced autopilot interface capabilities using the optional GAD 43.

INTEGRATED AVIONICS SYSTEMS

Manufacturer	Model	Inputs	Outputs	CDU Type / Dimensions	Operational Capabilities	Weight (lb.) / Dimensions / Power Required	Price/Remarks
Garmin International 1200 E. 151st St. Olathe, KS 66062-3426 (913) 397-8200 Fax: (913) 397-8282 www.garmin.com	**G1000**	TCAS i/II, RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	10- or 12-in. flat-panel LCDs interchangeable for use as either a PFD or MFD. Optional 15 in. screen available	see remarks	— — —	Price varies by installation. Integrates primary flight information, navigation, communication, weather, terrain and traffic data on two large format displays. Tailored to specific OEM requirements. Features include three-axis, all-digital automatic flight control system; Synthetic Vision Pathway navigation; dual solid-state AHRS; dual integrated radio modules with WAAS certified IFR Oceanic-approved GPS, VHF Nav with ILS and VHF Com with 16-watt transceivers and 8.33-kHz channel spacing; dual RVSM-compliant digital air-data computer; EICAS; Mode S transponder with TIS; Class B TAWS; Digital weather radar.
	G2000	TCAS i/II, RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	12- or 14-in. backlit LED see remarks	see remarks	— — —	Price varies by installation. Integrates primary flight information, navigation, communication, weather, terrain and traffic data on two large format displays. Tailored to specific OEM requirements. Features include three-axis, all-digital automatic flight control system; Synthetic Vision Pathway navigation; dual solid-state AHRS; dual integrated radio modules with WAAS certified IFR Oceanic-approved GPS, VHF Nav with ILS and VHF Com with 16-watt transceivers and 8.33-kHz channel spacing; dual RVSM-compliant digital air-data computer; EICAS; Mode S transponder with TIS; Class B TAWS; Digital weather radar.

INTEGRATED AVIONICS SYSTEMS

Manufacturer	Model	Inputs	Outputs	CDU Type / Dimensions	Operational Capabilities	Weight (lb.) / Dimensions / Power Required	Price/Remarks
Garmin International 1200 E. 151st St. Olathe, KS 66062-3426 (913) 397-8200 Fax: (913) 397-8282 www.garmin.com	**GTN 750**	TCAS i/II, RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data		GPS/VOR, LOC/GS	9.3 — —	$16,995
	GTN 725	TCAS i/II, RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data		GPS/VOR, LOC/GS	9.3 — —	$15,000
	GTN 650	TCAS i/II, RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data		GPS/VOR, LOC/GS	7.0 — —	$11,495
	GTN 635	TCAS i/II, RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data		GPS/VOR, LOC/GS	7.0 — —	$10,495
	GTN 625	TCAS i/II, RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data	RS 232, RS 422, RS 485; ARINC 429; HSDB, CD/HIS, RMI, air data		GPS/VOR, LOC/GS	7.0 — —	$9,595

INTEGRATED AVIONICS SYSTEMS

Manufacturer	Model	Inputs	Outputs	CDU Type / Dimensions	Operational Capabilities	Weight (lb.) / Dimensions / Power Required	Price/Remarks
Innovative Solutions & Support (IS&S) 70 Pennsylvania Dr. Exton, PA 19341 (610) 646-9800 Fax: (610) 646-0149 www.innovative-ss.com	**Cessna Citation AdViz Flat Panel Display**	RNCU, IFPD, EDCU, ECSU	RNCU, IFPD, EDCU, ECSU	AMLCD 10.4 in.	see remarks	— color TFT LCD touch-screen 600 x 270 configuration dependent	Price varies by installation. The IS&S Flat Panel Display is TSO-approved for Part 23/25 aircraft. The system is designed to replace existing instruments, including the EADI and EHSI displays, altimeter, airspeed and vertical speed indicators. Retrofitting existing aircraft is easily accomplished with minimal changes to existing aircraft wiring while reducing power consumption and weight. Options include satellite weater, e-charts, video, remote radio control.
	Eclipse Avio NG	ARINC 429, ARNC 453, RS 232, RS 42, Byteflite, Ethernet, discretes	ARINC 429, ARNC 453, RS 232, RS 42, Byteflite, USB, Ethernet, discretes	AMLCD PDF: 10.4 in. (2) MFD: 15.4 in.	see remarks	PFD: 8.5 MFD: 12.5 PFD: 10.4 in. (2) MFD: 15.4 in. PFD: 50 W MFD: 75 W	Price varies by installation. FMS options include either integrated WAAS-based FMS, exterior WAAS-based FMS or non-WAAS-based FMS; system provides PFD/ND with MFD functions and engine instruments; system interfaces with new or existing AP/FD/IFCS; TAWS display provided and connects directly with TAWS; remote tuned radios optional; e-charts, moving maps, radar display, satellite weather, TCAS-I, fuel management and aircraft systems pages.
	Pilatus PC-12 FPDS System	contact OEM for details	contact OEM for details	AMLCD 10.4; 15.0	see remarks	15 in. IPFD, 14 lb., 70 W; 10 in. IFPD, 8 lb., 35 W; DCP, 3.0 lb, 8 W — —	Price varies by installation. FMS options include either WAAS-based FMS, exterror WAAS-based FMS or non-WAAS-based FMS; systems provides PFD/ND with MFD functions; coupled WAAS LPV approach; system interfaces with new or existing AP/FD/IFCS; RVSM certified, options isnclude RS 170 or DVI video input on 5.15-in. IPFD; TAWS terrain display provided and connects directly with TAWS; e-charts certified.
	Vantage Cockpit/IP Flat Panel Display System	contact OEM for details	contact OEM for details	AMLCD 10.4	see remarks	— — —	Price varies by installation. FMS options include either WAAS-based FMS, exterror WAAS-based FMS or non-WAAS-based FMS; systems provides PFD/ND with MFD functions and engine instruments; system interfaces with new or existing AP/FD/IFCS; EVS input can be input fromEVS camera or other video camera via RS-170; TAWS terrain display provided and connect directly with TAWS; remote tuned radios optional. e-charts, moving maps (worldwide terrain 3-arc/second, radar display, satellite weather, TCAS-I/II, fuel management exceedance redording and video.
Rockwell Collins 400 Collins Rd. NE Cedar Rapids, Iowa 52498 www.rockwellcollins.com	**Pro Line Fusion**	numerous	numerous		FMS, PFD/MFD, EFIS, TAWS, RMU, EVS, SVS pending	— color LCD: 6.375 x 5.75 x 6.33 various, depending on installation	Price varies by installation. The typical Pro Line 21 major retrofit package includes 3-4 8 x 10-in. LCDs with advanced graphics, all digital CNS radios with dual Comm/Navs, dual transponders with enhanced surveillance, dual DME, single or dual FMS GPS WAAS, Digital Flight Control System (DFCS) with coupled VNAV, single or dual integrated Flight Information Systems (IFIS), dual channel radar altimeter, dual solid-state Attitude Heading Reference Systems (AHRS), dual air data systems (RVSM compliant), solid-state radar with turbulence detection, Engine indications on PFD or MFD, 2nd or 3rd FMS, 3rd AHRS, 3rd VHF-4000, 2nd ALT-4000, TCAS 4000, ADS-B transponders, single or dual HF-9000 radios, Satcom, CMU-4000 data link system, XM weather. maintenance diagnostics system, DBU-5000 data loader, and all-new wiring and connectors.Price varies by installation.